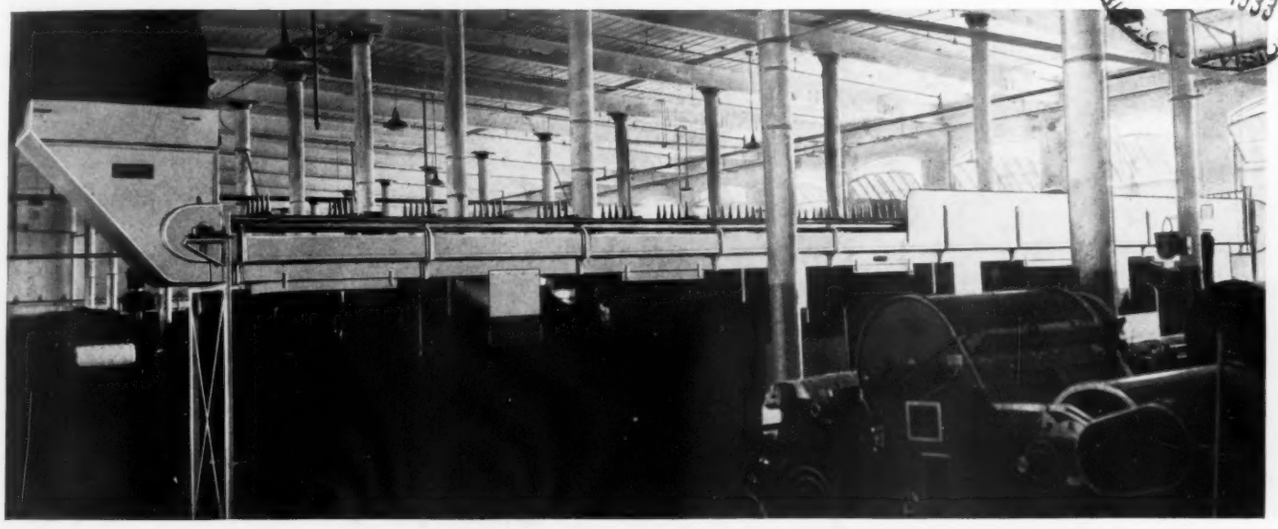
SEPTEMBER, 1933

COTTON

Serving the

TEXTILE INDUSTRIES

SEP 23 1933



One of Three "CAMCO" AUTOMATIC DISTRIBUTORS now operating in a well known Southern mill

The "CAMCO"

AUTOMATIC NON-OVERFLOW DISTRIBUTOR

AND

"G. E." ELECTRIC COTTON CONTROL

(Covered by U. S. Patent No. 1,899,791)

Insure the delivery of cleaner and more uniform laps and reduced operating costs; **eliminate an operating weakness inherent in all cotton distributors up to this time—spillage of excess cotton at the end of the line.**

The NON-OVERFLOW DISTRIBUTOR cleans, mixes and blends cotton in conveying it to the hoppers—maintains a constant cotton level in the hoppers; and when all hoppers are filled, conveys any excess cotton back to the condenser end of the line.

The "G.E." CONTROL regulates the flow of cotton from the opening and cleaning machines to the pickers, automatically taking care of cotton in transit through the cleaning machines and trunk line piping, when the hoppers supplying the pickers are filled.

Now in use by Largest Mills in Southern States

Write for full information on this Completely Automatic Distributor and Cotton Supply Control. One of our engineers will gladly consult with you, without obligation, regarding your particular problem.

The CENTRIF-AIR MACHINE CO. *Inc.*

ATLANTA, GEORGIA

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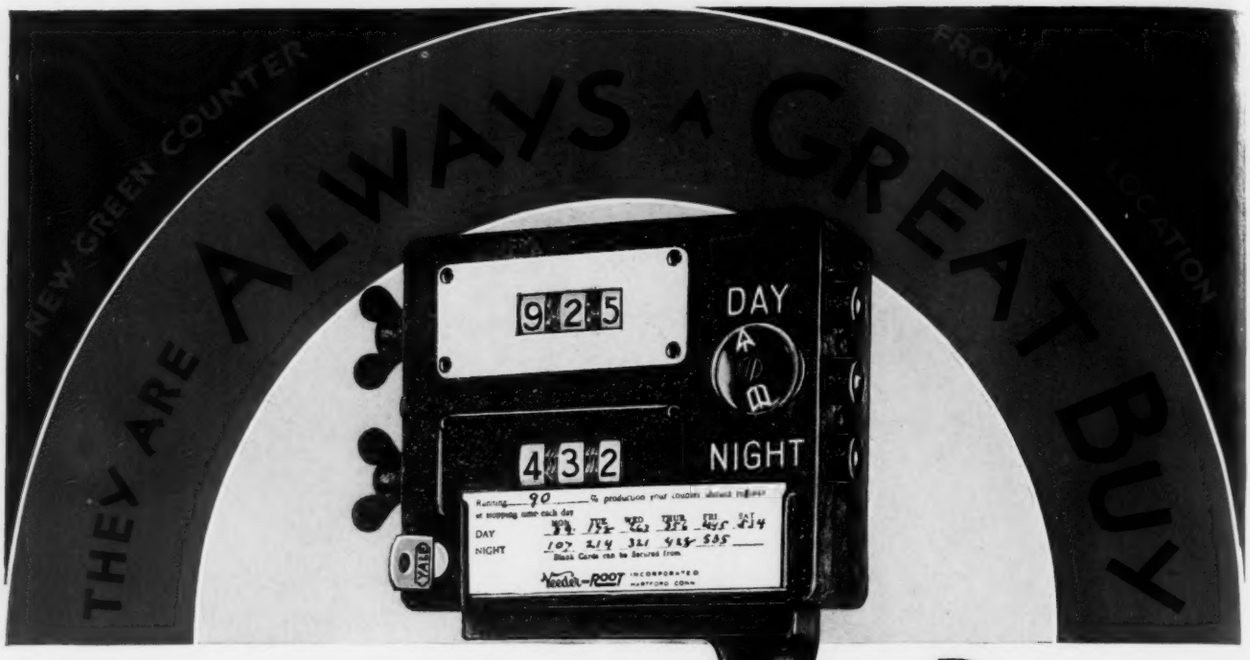


Veeder-Root PICK COUNTERS

TRUE COST is the Price divided by Years of Service 325,000 VERTICAL DRIVE VEEDER-ROOT Pick Counters are giving service since installation—some for 15 years. . . Figure the cost per loom *per year*, plus the certainty of a trouble-free installation. Fifty years of counter engineering assure you of this service. . . *TRUE COST* as measured by long-term performance is the point we would like to discuss with you *NOW* before you buy. *Write or wire.* » »

Save 12¢

Cost 3¢

Earn 9¢

per loom per week!

COUPON: *—pin to your business letterhead*

Send us your survey and analysis of mill operating costs, with information on the new GREEN COUNTER for free trial installation. » » »

Veeder-Root INCORPORATED

HARTFORD, CONN., GREENVILLE, S.C.

COTTON is published monthly by W. B. C. Smith Publishing Co., Dalton and Atlanta, Ga. Subscription Rates, United States and Possessions, $1.00 for one year; $2.[illegible] for three years; Canada, $1.50 per year; Foreign countries, $2.00 per year. Entered as second-class matter at the postoffice, Dalton, Ga., under the Act of March 3, 187[illegible]

The Zero Hour!

What Would You Have Thought
If Your Son Had Been Sent
Over the Top with a Blunderbuss?

What Will Happen to Your Mill
If You Attack Present Conditions
With Out-of-date Machines
That Belong in the Scrap Pile?

You Believe in Preparedness!
This is the Zero Hour in Business!
Your Mill is the Army of Attack!

You Can't Win
With Antiquated Machines

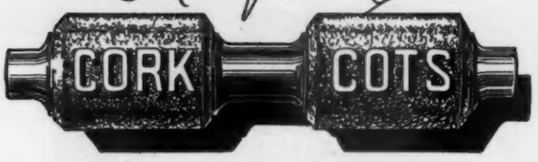
You Can Win
With Modern X and C Model Looms

They Weave Quality Fabrics
at Low Cost

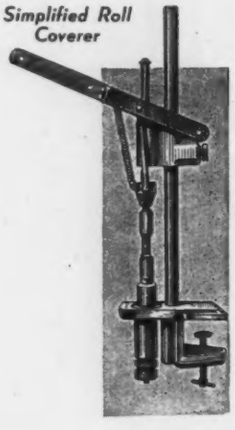
DRAPER CORPORATION
Hopedale Massachusetts
Southern Offices Atlanta Ga and Spartanburg S C

SONOCO

Reenforced



—a part of your efficiency code



SONOCO CORK COTS lower roll-covering costs. Economy starts with low first cost for a cot that wears three to four times longer, and continues because it can be easily and cheaply resurfaced on the roll several times.

With the aid of the SONOCO Pull-On Machine and Buffing Machine, roll covering becomes so simple an operation that experience or skill is no longer necessary and expensive equipment is done away with. Thus, with the adoption of SONOCO CORK COTS, a costly and highly technical maintenance problem is economically and efficiently solved, bringing in its wake obviously important savings.

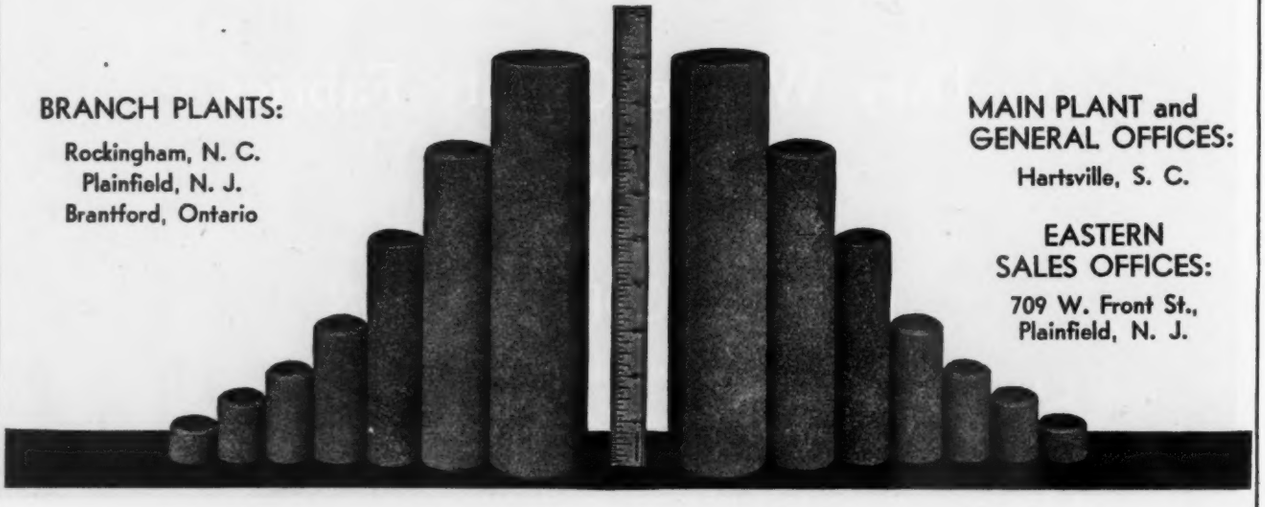
SONOCO PRODUCTS COMPANY

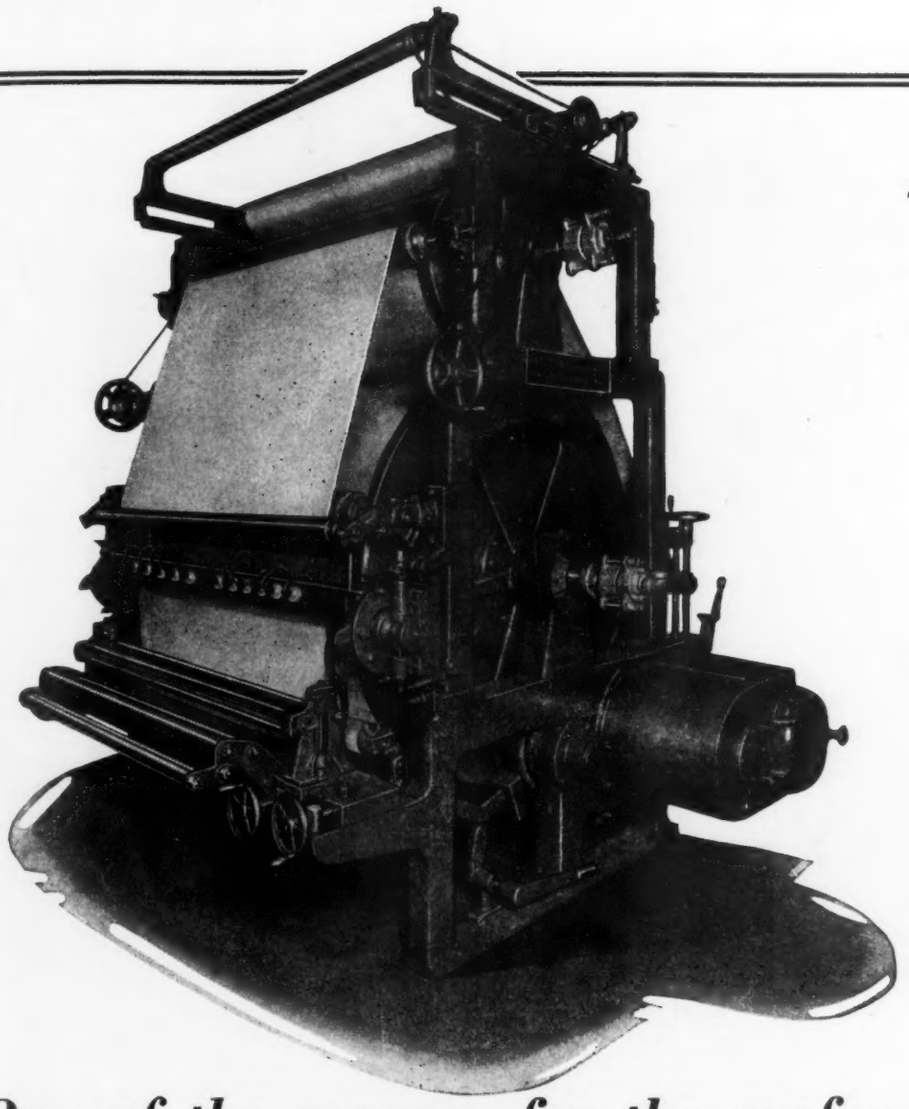
HARTSVILLE, SOUTH CAROLINA

BRANCH PLANTS:
Rockingham, N. C.
Plainfield, N. J.
Brantford, Ontario

MAIN PLANT and GENERAL OFFICES:
Hartsville, S. C.

EASTERN SALES OFFICES:
709 W. Front St.,
Plainfield, N. J.





HAVEG

Licensed manufacturers in the Textile Industry of HAVEG, the acid and corrosion resistant material for vats, tanks, piping and fittings.

One of the reasons for the preference for the

BUTTERWORTH SANFORIZER

Butterworth Finishing Machine, which plays a big part in good Sanforizing

This is the latest type machine with improved blanket tension device which gives greater adjustment to the blanket and insures it giving a maximum of service.

We'll be glad to give you other reasons why some of the largest plants in the country have installed Butterworth Sanforizers.

H. W. BUTTERWORTH & SONS COMPANY, ***Established 1820***
PHILADELPHIA, PA.
PLANTS *at* PHILADELPHIA *and* BETHAYRES, PA.

New England Office:
TURKS HEAD BUILDING
Providence, R. I.

Southern Office:
JOHNSTON BUILDING
Charlotte, N. C.

In Canada:
W. J. WESTAWAY CO.
Hamilton, Ontario

BUTTERWORTH *Finishing* MACHINERY

A COMPLETE LINE OF FINISHING AND RAYON MACHINERY FOR THE TEXTILE INDUSTRY

Cone Winding Cotton Knitting Yarn

CONE WINDING the last process in the Spinning Mill making yarn for Knitting, is the Mill's most important process.

The care and skill put into the production of a high grade yarn is rendered nil if the finishing process is not up to date.

The Foster Model 102 Cone Winder is a refinement of former Cone Winding processes, retaining all the time-approved features of the Foster Cone of former Models and adding more delicate manipulation of the yarn while winding, exact lay of coils on the cone surface to reduce variation in tension from the cone on Knitting Machine and additional slub-catching, making the 102 Foster Cone more than ever before the

"Standard Knitting Package"

Foster Machine Company

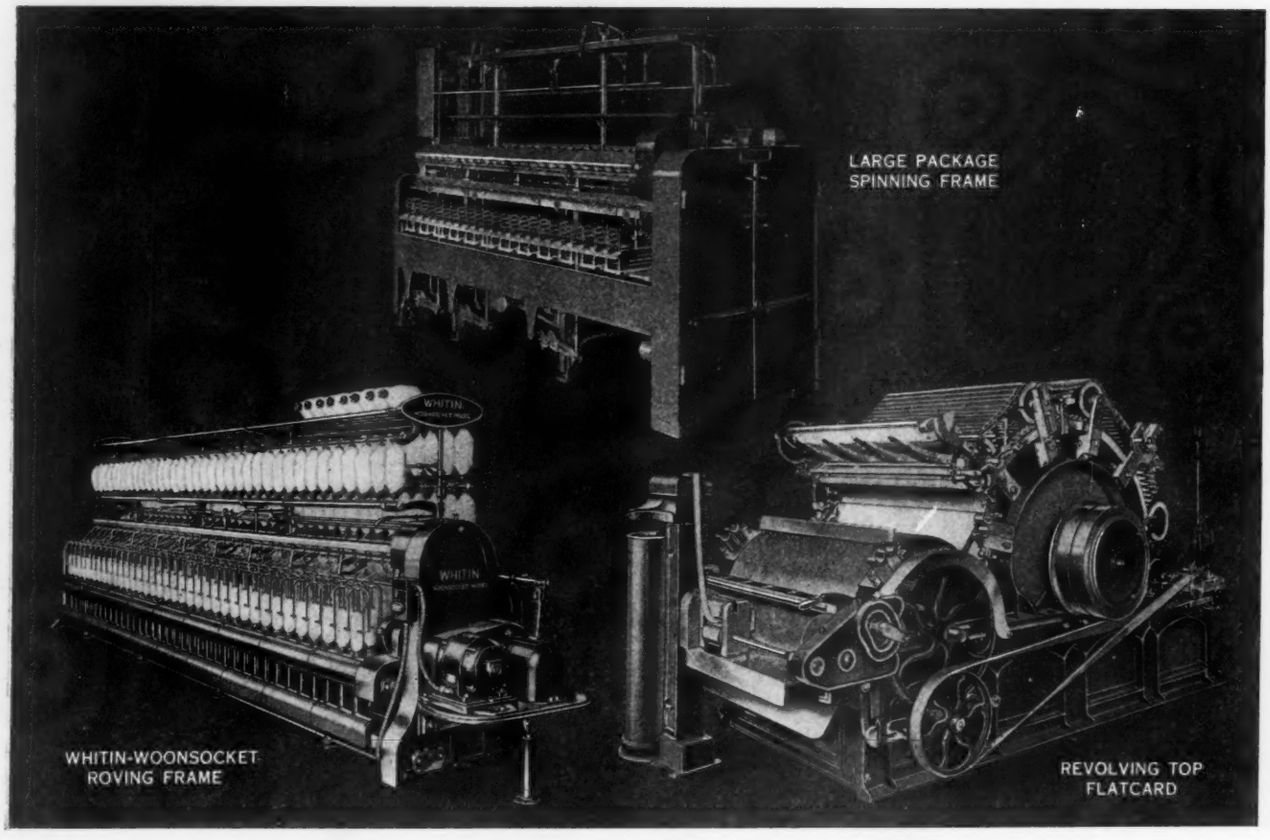
WESTFIELD, MASSACHUSETTS.

FRED P. BROOKS, REPRESENTATIVE, P. O. BOX 941, ATLANTA, GA.

"TRIED AND TRUE!"

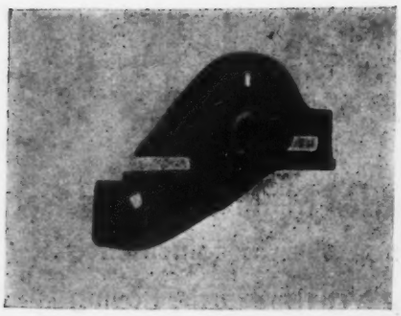
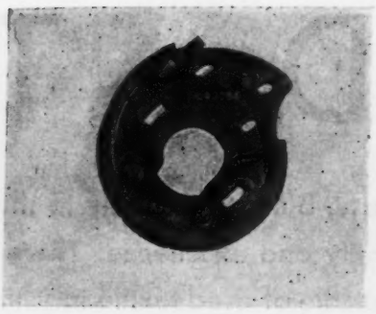
A commonplace old phrase, but applied only to the proven friend or product. It is synonymous with quality and excellence. There is more than a coincidence in the fact that at a recent sale of used textile machinery WHITIN Cards, Roving Frames, Twisters and Spinning Frames were purchased at from two to four times the prices paid for similar machines of competitive makes. The reasons were built into the machines themselves.

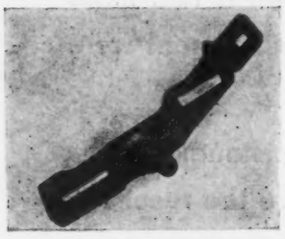
"For Services Rendered", WHITIN products have always been outstanding in the industry. There will be no lowering of our standards, which are the results of advanced design and honest workmanship, the culmination of over a century of service to the trade.



WHITIN MACHINE WORKS

Charlotte, N. C. Whitinsville, Massachusetts, U. S. A. Atlanta, Ga.

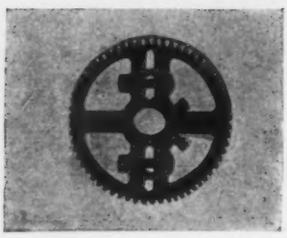


HENDERSON
REPAIR PARTS

Made from precision patterns, of the highest quality materials, by skilled mechanics, employing efficient equipment, Henderson superior repair parts are giving long, trouble-free service to a constantly increasing number of textile mills.

Reduce
Maintenance Costs

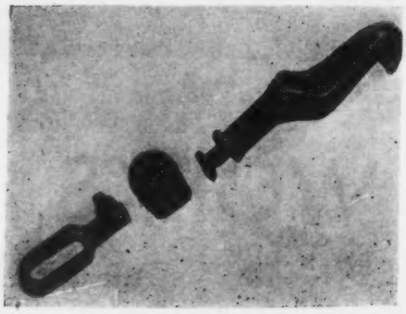
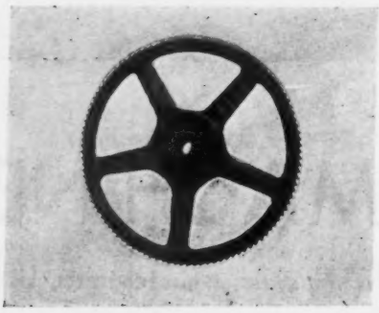
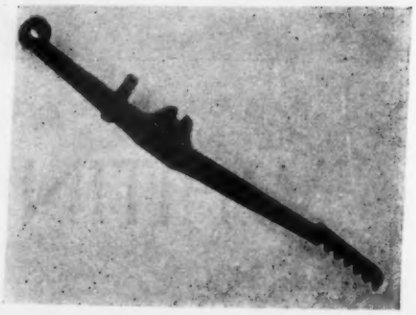
Low overhead and close location enable us to save Southern mills money. Under present operating conditions, mill managements generally are scrutinizing their purchases carefully and putting each department of the mill on as an efficient and economical basis as possible.



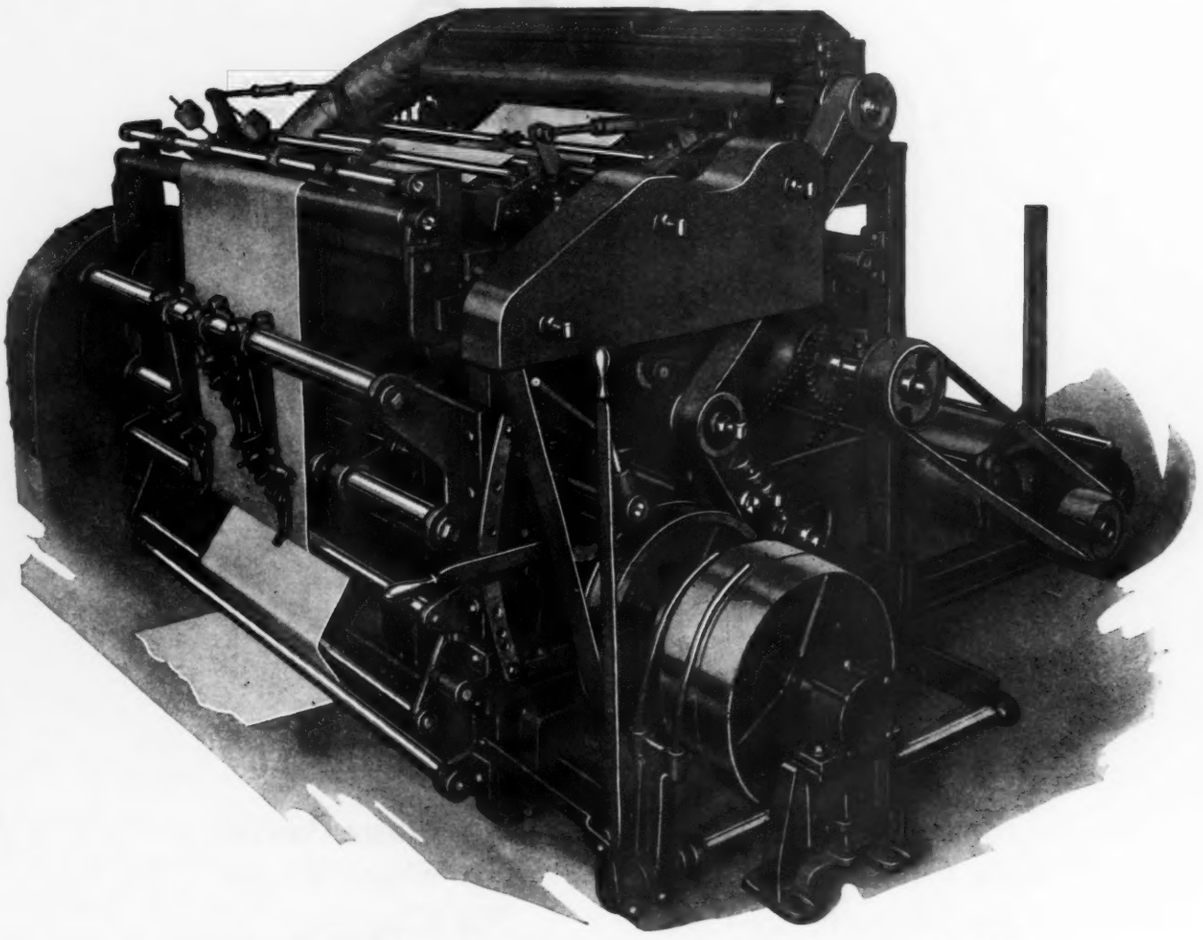
You will find it advantageous to

ANTICIPATE HIGHER COSTS BY PLACING YOUR ORDERS FOR NEEDED REPAIR PARTS AT ONCE, OR DROP US A LINE AND LET US QUOTE YOU PRICES ON ANY PARTS YOU DESIRE.

HENDERSON FOUNDRY & MCH. WORKS
HAMPTON, GEORGIA

AUTOMATIC COTTON SHEAR



THREE BLADE CENTURIAL COTTON SHEAR WITH AUTOMATIC SEAMLETHRU

PERFECTLY CLEANS ALL COTTONS
SAVES MANY CLOTH PICKERS
SAVES ALL SHEAR TENDERS
SAVES ENTIRE COST QUICKLY

LET US PROVE IT BY A FREE TRIAL, YOU THE JUDGE

THE PATENT SEAMLETHRU DOES IT

This attachment has genuine selective fingers. The rests will not open for a slub or knot and then close on a seam, causing cloth and blade damage.

It has no cam to complete its cycle but is self-interrupting. A sewing will arrest it at any stage and start it anew. You can't trick it.

WRITE OUR SOUTHERN REPRESENTATIVE
P. B. RAIFORD, JR., CONCORD, NORTH CAROLINA

PARKS & WOOLSON MACHINE CO. SPRINGFIELD VERMONT

THE NEW

RIHCO

HUMIDIFIER HEAD

THE IDEAL HUMIDIFIER

Low First Cost
Low Operating Cost
Low Maintenance Cost
No Cleaning Expense
No Wetting Down
No Waste Power
No Waste Water
No Clogging
No Filter Tanks
Absolutely Automatic

"More Moisture For Less Money"

Write for our bulletin which explains why the RIHCO System is the best to install and cheapest to operate.

Manufactured by

R. I. Humidifier & Ventilating Co.,
Boston, Mass.

Exclusive Southern Agents

AldricH MachinE
Greenwood, WorkS South Carolina

Clothing A Nation's Cards

HOWARD BROTHERS have located plants and warehouses at strategic points throughout the country's textile centers in order to give you immediate shipment. You can get the quickest possible service whether your requirements are TUFFER Card Clothing; Cylinder, Doffer, Stripper, Burnisher, or Emery Fillets; Napper Clothing; Wire Heddles; Hand Stripping Cards; or Strickles.

When your Top Flats and Lickerins are in need of repairs, Howard Brothers maintain a supply of extra sets for your use while this work is being done.

Our representatives are thoroughly competent to talk over card clothing matters and are at your service at all times.

HOWARD BROS. MFG. CO., WORCESTER, MASS.

Southern Plant
244 FORSYTH ST., S.W., ATLANTA, GA.

Branch Offices:
PHILADELPHIA — DALLAS — WASHINGTON

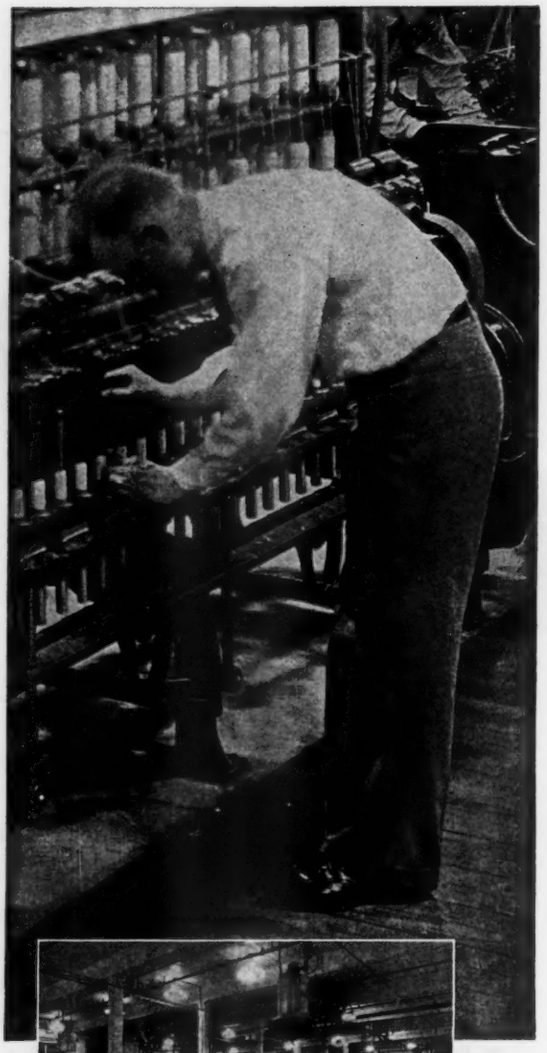
TRADE MARK
TUFFER
REG. U.S. PAT. OFF.

CARD CLOTHING

Better Light—Better Sight

BETTER QUALITY—

BETTER BUSINESS!



● THE machinery of the textile industry is marvelously precise—marvelously efficient. It is uncanny in its ability to perform gigantic tasks with persistent uniformity.

Yet there is always a point at which human eyes plus human intelligence enter into production and transcend this amazing, almost human, machinery. And these are always the most important points in production—the points where *seeing,* and seeing clearly, means the guardianship of *quality* and the *protection of reputation.*

Perhaps that is why *good* LIGHT is generally recognized as a fundamental for successful, profitable operation in the textile industry.

In recent years there has been tremendous growth in the development and use of higher intensity lighting—because *good* lighting has proved highly economical, highly efficient.

Instead of the deep windows and the gray gloom of a comparatively few years ago the American textile industry has found it profitable to work bathed in light by day or by night. And now modern mills everywhere are sending out fabrics that excel, in *quality* and uniformity, any standards of the past.

But there are still many mills that could lessen waste, cut production costs, heighten quality, and increase profits through better lighting.

[This fact has special immediate significance if you are planning to operate 80 hours a week. Shorter hours and increased pay may be offset to some extent by increased quality production . . . fewer "seconds".]

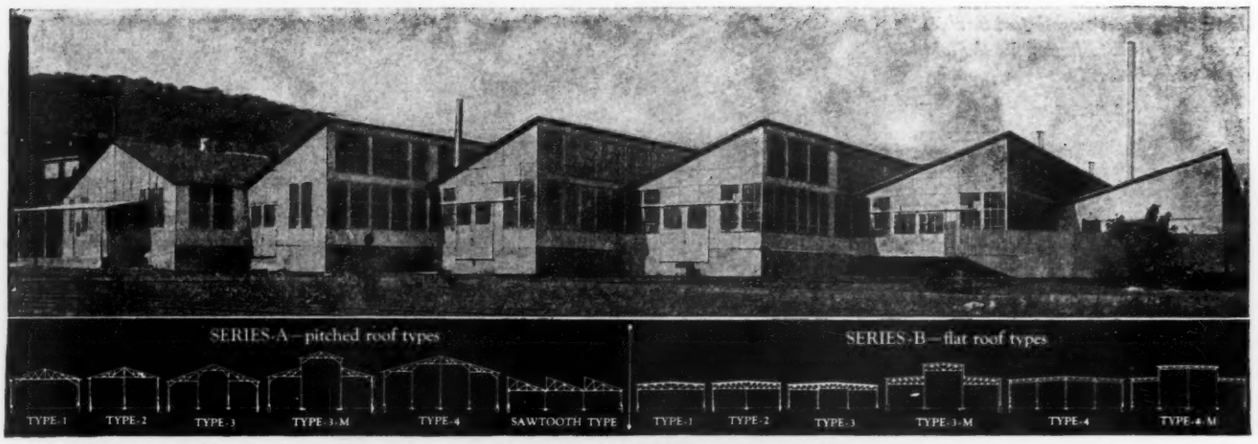
Modern lighting improves employee morale, and increases the safety factor by lessening accidents; it benefits humanity.

For the service of your and other industries General Electric maintains a staff of competent lighting engineers whose experience and skill are available to you without cost. Write General Electric Company, Nela Park, Cleveland, Ohio.

General Electric invites you to visit its exhibit in the Electrical Building at the Century of Progress

GENERAL ELECTRIC

MAZDA LAMPS



STEEL BUILDINGS

Quick Erection for Winter at Present Low Costs with New Features of Improved Insulation, Permanence, Adaptability and Fire Safety

Insulated Walls

Insulated Roofs

Truscon Standardized Steel Buildings are individualized to your exact requirements with Steel Doors, Steel Windows and every modern feature for greatest working efficiency. Ferroclad Insulated Walls 1-inch thick are equal to 12-inch masonry in maintaining inside temperature. Steeldeck Insulated Roofs give full protection. Buildings are available in all types and sizes, quickly erected at low cost from accurately shop fabricated sections that save you money, labor and time. They follow the best engineering design, developed and proved in thousands of installations.

Write for Illustrated Catalog and Estimates.

Ferroclad Panels for Textile Dryers

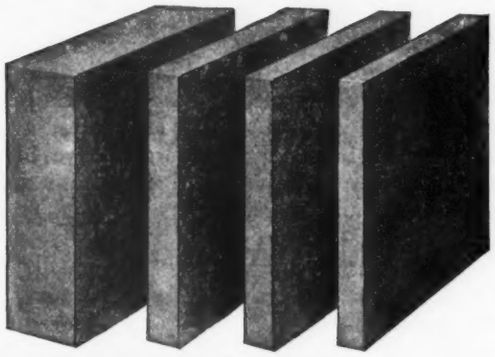
Low Conductivity • Longer Life • Easier Erection • Lower Cost

This remarkable development provides semi-rigid commercial insulation permanently sealed between galvanized sheets with edges thoroughly waterproofed. Designed for fixed or removable panels that greatly decrease overall conductivity, improve dryer efficiency and give longer life. Easily cut with saws and erected at lowest possible costs. Each panel is a strong, sealed, structural and insulation unit that is proof against moisture penetration under conditions of excessive humidity. Furnished also with metal on one side.

Sample and Catalog on Request.

TRUSCON STEEL CO., YOUNGSTOWN, OHIO

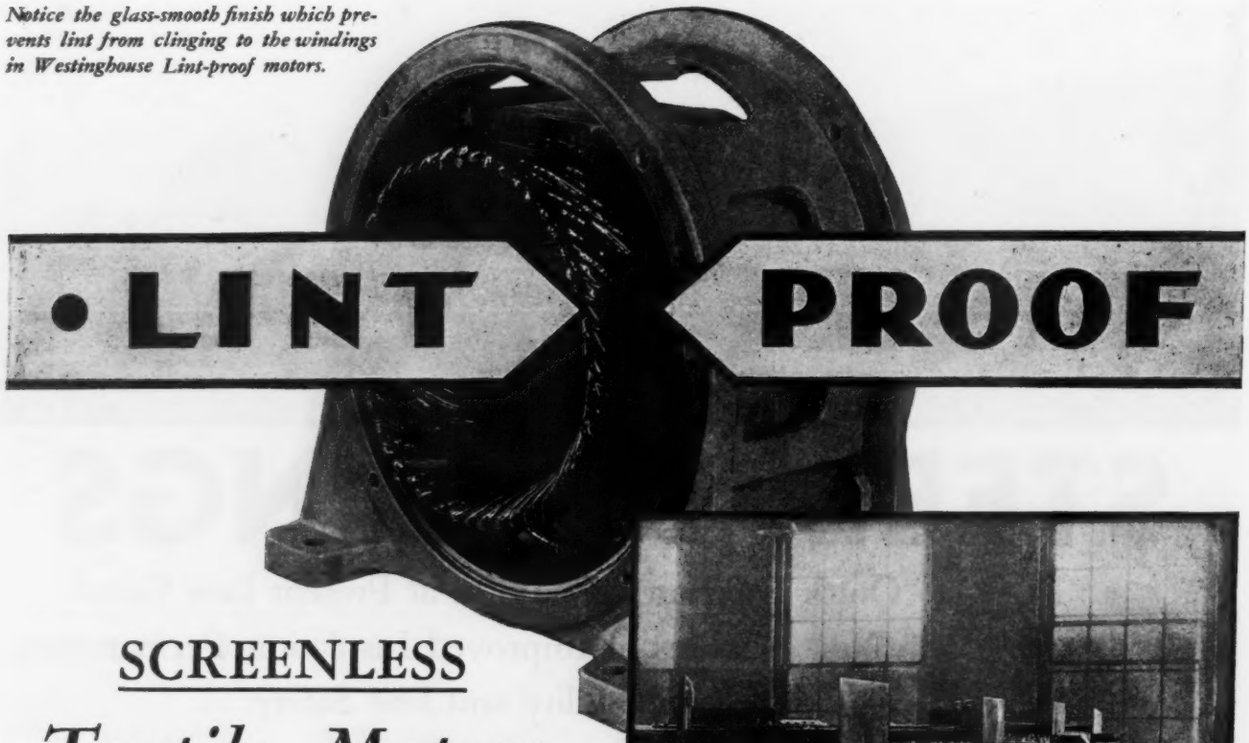
Engineering and Sales Offices in all Principal Cities



Thickness of insulation ½″, 1″, 1½″ or 2″. Made in all sizes to 12′ long, 48″ wide, of 24 gauge or heavier galvanized steel facing, or 12′ long, 42″ wide, in 25, 26 or 27 gauge.

TRUSCON

Notice the glass-smooth finish which prevents lint from clinging to the windings in Westinghouse Lint-proof motors.



SCREENLESS
Textile Motors
Cut
Your Cleaning Costs

LINT that gets into Westinghouse LINT-PROOF screenless Motors doesn't stay.

Specially shaped rotor vanes circulate air through the motor at the proper velocity to remove lint.

All air passages are large.

All surfaces exposed to lint are glass-smooth.

There are no screens to require cleaning.

This Lint-proof motor has been designed without sacrificing a single feature that the ideal textile motor should have. For instance, taped end-windings with their superior insulating properties have been retained, but they are given a glass-smooth finish to which lint cannot adhere.

Other Advantages

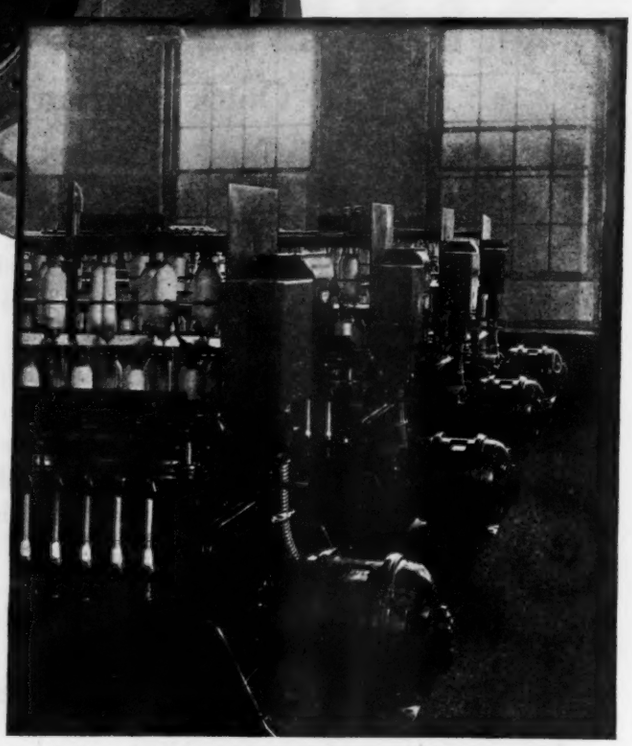
High Efficiency—Designed for minimum power consumption.

Uniform Cooling—The thin, smooth coating over the windings does not retain heat.

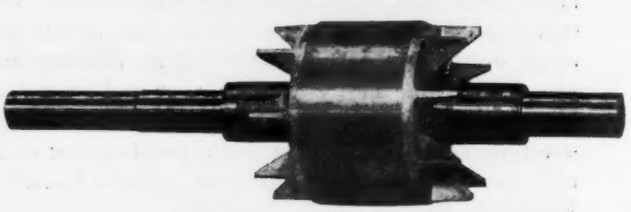
Low Maintenance Bearings—Oil-tight and dust-tight Sealed Sleeve or ball bearings can be supplied.

Thermoguard Protection—This new protective feature can be applied to Westinghouse Lint-proof motors.

Call or write the nearest Westinghouse office for additional information on these improved textile motors and control to match.



Westinghouse Lint-proof Motors driving Spinning frames in a North Carolina Cotton Mill.



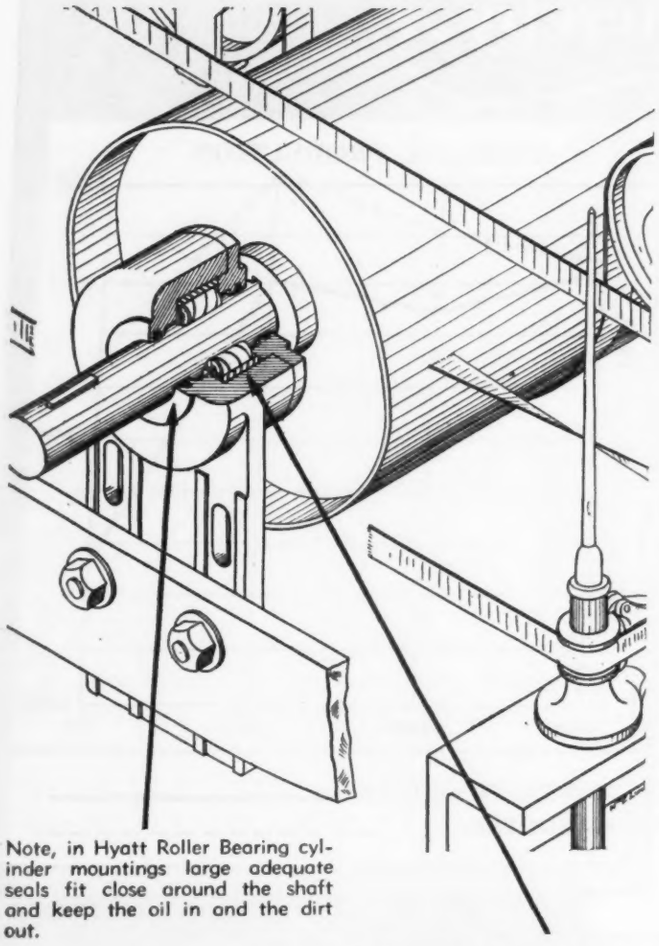
Rotor of Lint-proof Motor. Note the die-cast blowers with tapered edges against which lint cannot pack.

T 79637

Westinghouse

Quality workmanship guarantees every Westinghouse product

GOOD SPINNING, TWISTING AND DRAWING FRAMES MADE BETTER WITH THESE BETTER BEARINGS



Note, in Hyatt Roller Bearing cylinder mountings large adequate seals fit close around the shaft and keep the oil in and the dirt out.

This is the way a Hyatt bearing looks when mounted in a spinning frame or twister. A part of the housing has been cut away to show the details.

To replace a cylinder or make repairs of any kind, it is not necessary to struggle with a wrench between close fitting cylinder arbors to loosen nuts or clamping devices. The shaft pulls out through the bearing exactly as in the case of an ordinary babbitted bearing.

Here is a simplified, rigid, smooth running anti-friction bearing for the cylinders of spinning frames and twisters. Hyatt accurately made alloy steel rollers and hardened and ground solid steel race have merely supplanted the babbitt.

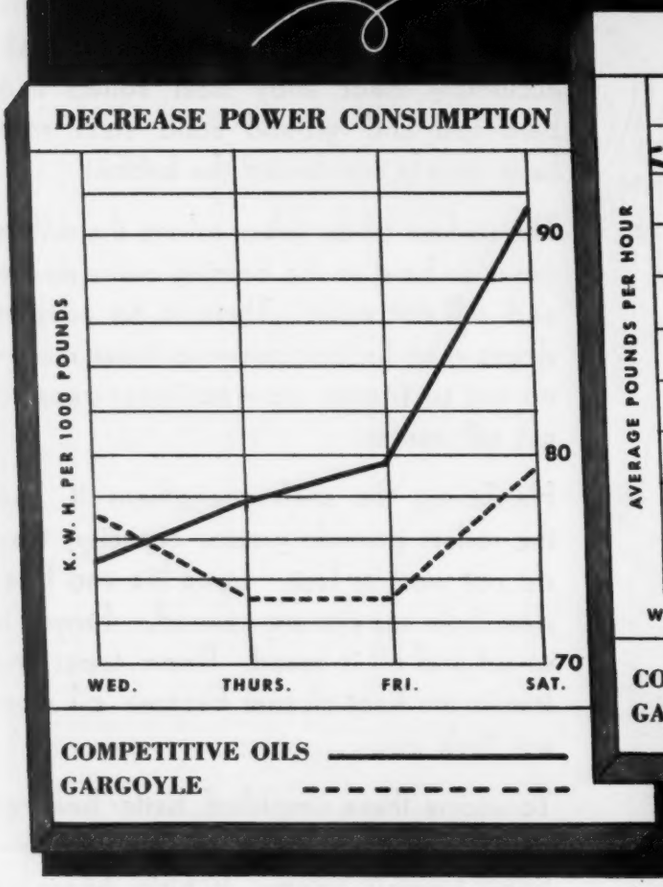
The surface of the arbor where the rollers run is as hard as the bearing outer sleeve and will not wear. There is no adapter sleeve—no locking nut—no inner race—no nut to loosen up—no inner race to get off center.

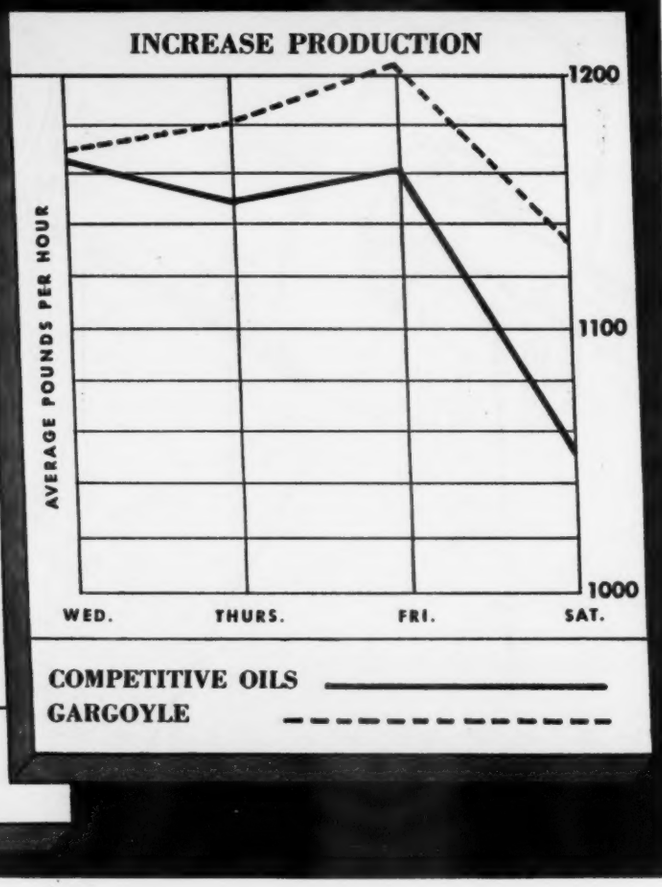
Hardening the shaft strengthens it, and the rollers provide greater capacity; they do not wear as fast. Long life and freedom from repairs are assured. Power is saved and oil is saved. Floors, tapes and frames are kept cleaner because oil does not leak out.

To secure these simplified, better bearings order them from the machinery builder—Saco-Lowell Shops, Whitin Machine Works and H. & B. American Machine Company. For further details let us send bulletin on Hyatt cylinder applications. Hyatt Roller Bearing Company, P. O. Box 476, Newark, N. J.

HYATT
ROLLER BEARINGS
PRODUCT OF GENERAL MOTORS

These DOTTED LINES *prove that* Gargoyle Lubricants reduce frictional resistance and thereby





Do you realize that sometimes as much as 70% of the power you pay for doesn't do a thing except overcome machinery's resistance to motion? If you could find some way to reduce this resistance, you could quickly save hundreds—even thousands—of the dollars you're now paying out for power.

There *is* a way to reduce this *wasted* power—a way used by leading mills of every type. These mills have proved under actual operating conditions that Gargoyle Vactra X Oils and Gargoyle Velocite Oils minimize friction *and thereby cut power consumption anywhere from 5% to 10%.*

The charts on this page show the results of recent tests made on a group of spinning jennies in a twine mill. They show, first, that Gargoyle Vactra X Oils reduced power consumption substantially (about 7%). They show further that these high-grade lubricants helped this mill increase production (2.6%). This confirmed a previous test which gave approximately the same results.

Do you run a cotton mill? A silk mill? A woolen mill? Whichever you're interested in, a Socony-Vacuum representative can show you substantial power savings made with Gargoyle Lubricants in a similar mill. It may pay you well to talk to a representative now. Even a 2% saving in power consumption will more than pay your entire annual oil bill.

GARGOYLE
Lubricating Oils

Socony-Vacuum Corporation, 26 Broadway, New York City. Branches and distributors in principal cities throughout the world.

SOCONY-VACUUM
CORPORATION

Again

G-E Gear-motors

Cut Installation Costs

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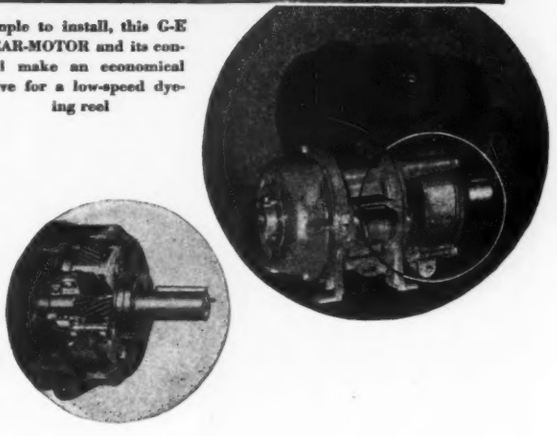

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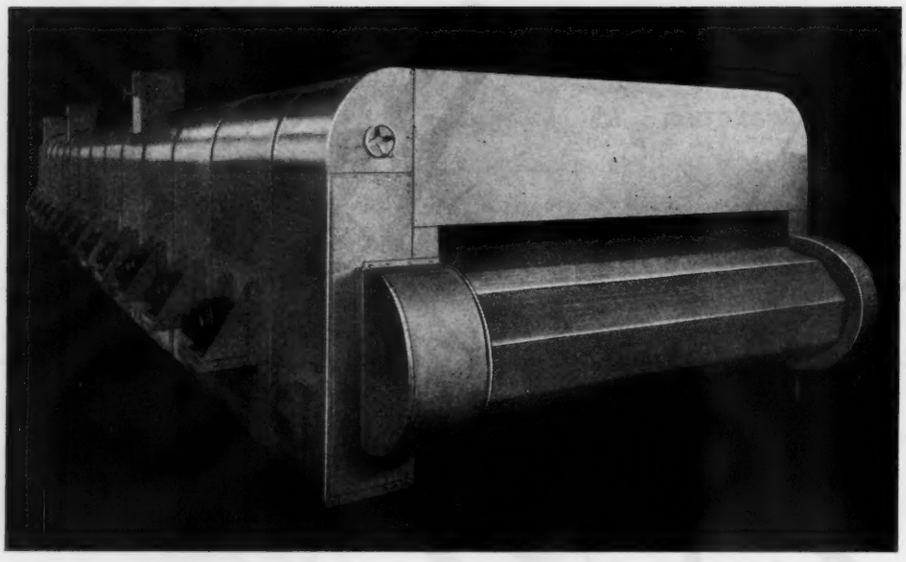

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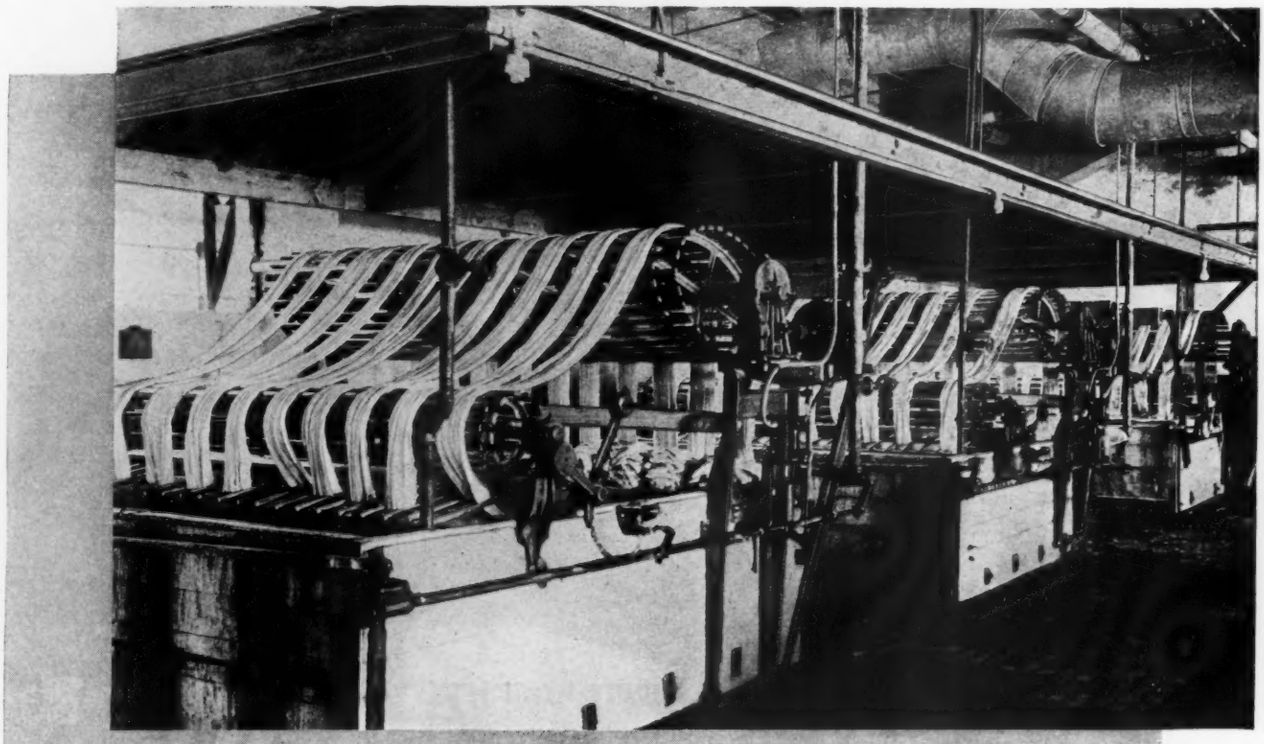

A battery of three Monel Metal lined peroxide bleaching machines in the plant of Montreal Cottons, Ltd., Valleyfield, Quebec. These machines are used for peroxide bleaching only, and have been in service longer than two years.

"O. K. IN EVERY RESPECT" REPORTS USER AFTER 2 YEARS

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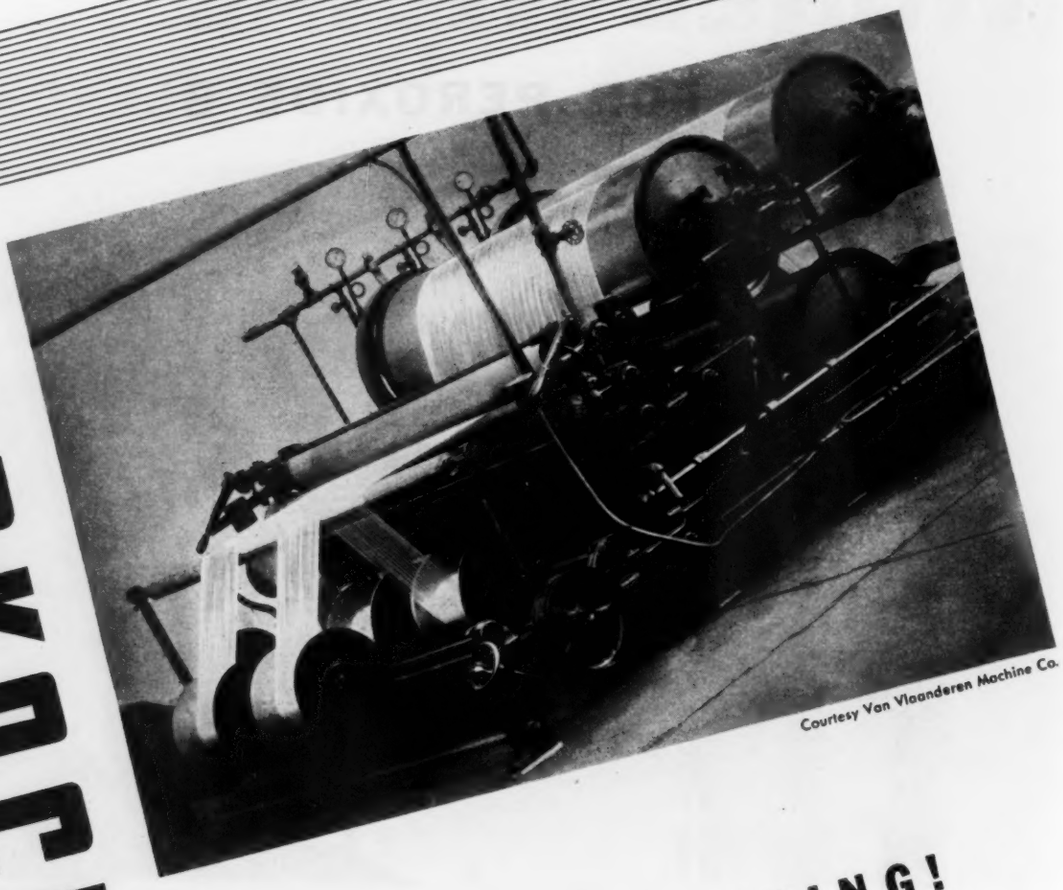

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NORFOLK, VIRGINIA

Vol. 97 **COTTON** No. 9

September, 1933

W. R. C. SMITH, Publisher
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Vol. 97
No. 9

COTTON

September,
1933

How the Textile Business May Profit Under the NRA

By Dunhill Marsden

THIS discussion may give you a new slant on the broad principles of the recovery act. While it covers the original law in general terms, it is written by a man in close touch with textile problems and was prepared especially for the textile reader, and with an eye on the application of the act to textile manufacturing . . . . . .

FOR more than three years Wallace B. Donham, Dean of the Harvard Graduate School of Business Administration, has been proclaiming that this depression was something wholly different in its essentials from previous depressions; that we were at the end of an era and approaching a new stage in the evolution of industrial revolution where the old rules would no longer apply; that the world was maturing industrially; that the old basis for many of our economic practices was gone and gone for good; that rear guard actions devised in an effort to maintain the existing status of things would not work; that without constructive planning devoted to the future of this country we faced a very prolonged and deep depression and he finally suggested that there was no reason to assume that without planning we would ever recover from the depression and get back to the old normal.

This spokesman of a "brain trust" was not the only exponent of this philosophy, there were many others agreeing with him. However, not so many of them were in the business world. To quote another thought from him, the average business man was still devoting 98 per cent of his energy and thought to his own business and only 2 percent to the difficult, economic problems of the nation. The time seems to be present now when the average business man will have to spend 98 percent of his energies and efforts in trying to solve national, economic problems, with 2 percent devoted to his own individual problems.

The National Industrial Recovery Act is a legal expression of the philosophy of those who believe that some form of planning, some form of industrial control is necessary at this particular time, in the beginning of what seems to be a new era. It is without doubt the most important piece of legislation ever enacted in the United States. It affects the methods of doing business of every concern in the country. The business unit is no longer to be self-governing. It is to be governed by a code of the trade or industry. The government is to become a great directing partner of the various industrial units of our nation. Under the act as set up, the government does not attempt, however, to control. It hopes to direct and co-operate.

Because of this revolutionary act and attitude of the government, many business men and industrialists feel that the government is encroaching upon their inalienable rights; that individual initiative and rugged individualism are being throttled; that the social concept of the act is too pronounced; that there is a possibility of business and industrial stagnation.

Since this attitude has been assumed by some, I have been asked to explain some of the advantages that may come to industry by the proper observance of this momentous piece of legislation.

I know of no better way to discuss these advantages than to discuss the caption of the Act. The first purpose of the Act as outlined in the caption is the elimination of unfair competitive practices. There is not an industry large or small that has not felt the ravages of unfair, competitive practices.

Eliminating Unfair Competition

There is not an industry that has not yearned most earnestly for the elimination of these practices, but the eternal treadmill of the endless cycle on which business has been traveling was such that no man could find a place to center his attack. These practices, in a large measure, have expressed themselves in price-cutting to such an extent that competition has had the word "cut-throat" placed in front of it.

This competition has made necessary all kinds of abuses in wage rates and operating time of machinery, and merchandising methods. It has depressed buying power and further increased competition and further reduced wages and increased unemployment and thereby caused the loss of millions of dollars both to the industrialists and to the employees. It has created suspicions and business animosities and industry has made for itself an undesirable reputation.

This new legislation provides a means for reliev-

ing industry of this blood sucking vampire; it provides a means for the stabilization of production in keeping with demand; it provides a means of bringing all units of the same industry into a maximum operating time; it provides a means for a minimum below which wages cannot go; in short, it makes industrialists become merchants, as well as manufacturers.

The law also provides that codes may be established not only for the regulation of labor hours, machinery hours and minimum wages; it also provides for codes of ethical trade practices and provides a machinery and an authority for their proper observation. It seems to me that this one factor is of vital and immeasurable value to the industrialist who can sense the trend of the times and his responsibility to himself, to his community and to his nation.

Relieving Unemployment

The second purpose of the Act is stated as the reduction and relief of unemployment. Some manufacturer may look at this purpose and feel that he is removed from that national, economic situation; that he is responsible only for the operation of his plant, and particularly to his stockholders.

It is true that these are very imposing responsibilities and yet in this new era, there are demands that make this second purpose a very necessary part of his program. The reduction and relief of unemployment means to him greater purchasing power for his commodities and less taxes for the relief of the unemployed.

TEXTILE men, pressed with the intricacies of applying the code to their business, may lose sight of the broad purposes and opportunities of the National Industrial Recovery Act under which their code was approved. Here Mr. Marsden, a familiar commentator upon textile subjects in our columns, has given a broad-gauge view of this tremendous subject, in an informative, inspirational, and thoroughly readable manner. His views on the advantages accruing to business are especially interesting. . . . . .

Regardless of how these unemployed are cared for, whether by state, nation or city, the money must be secured by these various agencies from those who have the money. In addition to the caring for the unemployed, there is a vast machinery of social workers who must be paid to administer this relief and too the administration afforded by these relief agencies carry to these stricken workers only a bare livelihood and nothing extra for purchasing power.

In other words, the average manufacturer is paying heavily for the support of unemployment and not increasing the purchasing power of the community in which such is being done. The reduction and relief of unemployment by the establishment of minimum wages and shorter hours, thereby reducing unemployment increases the purchasing power of the community, gives a respectability to its workers, a thrift which makes good citizens and allows them to earn something more than the bare necessities of life which the average man will spend; therefore, it seems that a real spiritual interpretation of the National Industrial Recovery Act in the reduction and relief of unemployment has a very direct, economic bearing upon the average business man of this nation, not to mention the social factors involved.

The third purpose of the Act is stated as the improvement of standards of labor. Among our progressive leaders in all branches of industry, there has been a strong desire to improve the standards of labor and many have made earnest efforts in providing shorter hours, better wages, better living conditions, better working conditions and numerous other manifestations, but in every industry there have always been those Shylocks demanding from every one with whom they came in contact their pound of flesh. They have had but little, if any, social concept of their civic responsibility. These groups have harassed and retarded progressive leaders in their altruistic movements.

Improving Labor Standards

The National Industrial Recovery Act provides for codes of improvement of the standards of labor and gives to the progressive leaders the opportunity of writing into these codes progressive ideas for the betterment of the labor classes, and then when these codes have been finally adopted the government of the United States makes them law and compels all employers to regard them.

There is no doubt about the economic influence upon the nation's business by the improvement of standards of labor. As these standards are moved upward, the aims and ideals of the workers move upward. Their demands for the better things become more pronounced, their civic ideals enlarge, their loyalty is enlarged, they become in every sense better citizens and better workers. Social and industrial unrest is reduced and the great distress of unhappiness caused by economic uncertainty is removed. Some one in discussing the application of the spiritual principles of the National Industrial Recovery Act referred to it as an application of the Golden Rule in business. And this is a very appropriate comparison.

Rehabilitating Industry

The fourth purpose of the Act is stated as the rehabilitation of industry. The word "rehabilitate" means to reconstruct to a former condition, and most assuredly in this sense the rehabilitation of industry means to put industry back into a state of prosperity. The Act provides that codes of control can be written in such a way that those people who have been called the "hogs of industry," in the manner of extreme operating time, in the manner of low wages, price-cutting and numerous other factors destructive of industrial progress may be placed under social and industrial control.

This Act provides for a distribution of industrial opportunity, for the elimination of unfair advantages, for a competition of fairness based upon a correct standard of ethics. It is an effort to place all industrialists upon a fundamentally sound economic basis. It has a tendency to stabilize operating time, to cause a free flow of goods throughout

the year, thereby giving to industry opportunity for operation and wage earners an opportunity for work, thus theoretically keeping purchasing power at somewhat an even flow.

It is an effort to prevent uncontrolled production followed by long periods of curtailment and of idleness. It is an effort to make available for continuous profitable and productive use of the established industrial wealth of the nation.

The fifth purpose of the Act is the conservation of national resources which may be coupled largely with Title 1 of the Act, but most specifically with Title 2, which has to do with the great public projects proposed by the national government either through its own initiative or through state and city cooperation.

It is hardly necessary to go into a discussion of this because the average industrialist is largely interested in Title 1. However, when Title 2 does begin to be operative it is going to reach back for its materials out of the results that come from the application of paragraphs in Title 1.

There are also two other rather significant implications in the Act that can be of benefit to the industrialist and they are overlooked by many. The discussion thus far has not hinted at these, nor does the average citizen see them.

Industry, in the Act, is made a tool of social and economic readjustment; those who wrote the Act had this narrow view of the requirements of recovery. The Act was termed the National Industrial Recovery Act. Since its principles have begun to be applied, it has been discovered that the title was too narrow; there are other factors in economic recovery; hence NIRA has been shortened to NRA, and made more comprehensive.

Labor Must Do Its Share

The first of these significant implications applies to labor. Industry and labor too often have been at variance with each other in their economic philosophies. The basic creed appears to be outlined for industry in the law. There seems, however, to be rather impressively suggested an attempted truce for industrial labor conflicts. This national law rather significantly implies, that, in the new program, labor has a cooperative duty, just as high and holy as industry; that this is no perfect plan, but it is a step in the direction of working out cooperative industrial relationships that will produce social solidarity.

There have been many notices of code violation on the part of industry with but little or no notice of code violations on the part of labor. This law represents a social contract; these codes are worked out under the supervision of the most fair minded representatives of labor, industry and commerce, and the public, that are available.

These code principles have the court and legal approval of this triumvirate administration. Therefore, labor has a part equally as mandatory as industry in executing the recovery plans. When labor wilfully and premeditatedly violates its part of the pact, it is just as much a social menace as is the industrialist who betrays his trust and has his eagle taken from him.

Labor is most assuredly co-responsible for the plan of recovery and can not evade this duty. The national civic mind must be thoroughly aware of this fact at all times, because public sentiment is the highest law of the land. If the public will help industry and labor to sense these responsibilities, labor and industry will benefit both in improved social stability and in economic security.

The Part of the Public

Another significant implication in the Act is the responsibility of the public in effectuating the policies of the NRA. It is a well known fact, evidenced by present conditions, that increased wages, increased employment and other factors in the Act will increase the prices of commodities, or materials affected by the Act. The public must create an attitude of buying and consuming support consonant with the program. Goods and manufactured products must move. Purchasing power must not only be increased, it must act in starting the free flow of goods. The public must in no way contribute any anxiety or ammunition that would tend to promote a "buyers' strike." In the execution of this Act costs will rise, but so long as profiteering or monopolistic tendencies do not appear the public is responsible for its contribution to the policies of the Act. Money and goods must flow and the public or final consumer is the keyman in the situation. When he stops, business stagnates.

The public has another function in building good will for the execution of the policies of the NRA. As stated above, public opinion or mass thinking is the most potent factor in determining success or failure. The public in this respect has the most vital responsibility of any of the three.

The public can nag and doubt and criticise and cynicise and destroy or it can boost and believe and give national faith and confidence in a constructive way. Public opinion kills or builds. The success or failure of the NRA rests finally with the reactions of the public.

In all disagreements or misunderstandings, there are always two sides and often righteousness and unrighteousness are on both sides. In disagreements or misunderstandings between employer and employee there are generally two distinct groups with a line cleavage difficult to erase. The public and the press which represents the public, can through ignorance or prejudice or carelessness create some very unwholesome and disastrous conditions in their uninformed or prejudicial opinions. Often exaggerated animosities develop because the public, in its eager and misdirected interest, tends to widen the breach rather than close it.

In this new industrial creed there will be many seeming opportunities for misunderstandings. The public and the press can do much in ameliorating these conditions if they will act as pacificators rather than agitators.

(Continued on page 65.)

Further Developments in Connection with the Cotton Textile Code

THIS running story covers further developments in connection with the cotton-textile code and its application. For a broad gauge discussion of the recovery act and its effect upon business, read the excellent article by Dunhill Marsden on page 25 of this issue . . . . . .

COTTON - TEXTILES, operating under Code No. 1, continued through August on the schedules begun under the code on July 17th, previously reported in the July and August issues. Gradual adjustment on the part of the industry and individual plants to the fundamental terms of the code was being effected. This brought about naturally some confusion, misunderstanding and many difficulties, and, in instances, trouble of various kinds. As a whole, however, cotton-textile manufacturers seemed to be less bothered by the complications of code operation than by the burdens imposed financially through the extreme demands of the cotton processing tax upon cotton opened for processing during August and upon floor stocks of cotton, including the stock in process. This is discussed on page 31 of this issue, including the subsequent modifications made and anticipated as to the payment of the tax.

During its first full month of operation under the code, the cotton-textile industry found itself adjusted to the new conditions of operation—including the decreased hours per shift, the minimum wage, etc. —to a very satisfactory extent. The number of mills previously on single shift which changed to double-shift operation, and the mills previously shut down which started up under the conditions created by the code, especially were responsible for an increase in the number of operatives employed; and throughout the industry there were substantial increases in payrolls to operatives, resulting from the establishment of the minimum wage and the scaling up of higher groups of jobs.

Code Violations

In the South and in New England, labor organizers made reports of violations of one kind or another under the code. It is felt that, without questioning the sincerity of many of these statements, that much of the information resulting in them had developed from biased or prejudiced sources. It seemed popular among an element that regardless of the actual reason for a discharge of an employee, to lay the blame to a code violation. On the other hand, that there have been some violations is not doubted, but it is felt that they resulted largely from misconception of the code's principles, or a lack of knowledge. It was emphasized last month that misunderstandings and mistakes in so rapid an application of a program so momentous could not be unexpected. Generally, however, it is felt that the mills as a whole have adopted the spirit as well as the letter of the code. Subsequent to the tremendous pressure involved in initiating the code, the Cotton-Textile Industry Committee has been making definite interpretations of some of the provisions not previously made sufficiently clear, and these interpretations will of course be continued as agreement and time permit.

Broadly speaking, the labor provisions of the code have been considered, as stated by General Hugh S. Johnson, the federal administrator of the recovery act, as quoted here last month, as "a new charter of rights for labor". The revolutionary change in the structure of the textile industry's set-up as to management and labor transactions is carrying with it grave concern on the part of many leading thinkers in the industry. Howard Coffin, chairman of the board of Southeastern Cottons, Inc., made the following comment:

Coffin's Comment on Labor Problem

"The ultimate outcome of this revolutionary adventure in national economics lies still in the realm of conjecture, but there is one threatening cloud upon the horizon which presages trouble of cyclonic intensity. The renewal of the half century old conflict between the open and closed shop might easily wreck our national recovery craft. The administration has 'sown the winds' of labor unionism; there is danger that we may 'reap the whirlwinds' of an untimely and disastrous industrial upheaval. Decisive action upon the part of the President, himself, would now seem the most effective answer."

There is no question that the provisions of the code have, as indicated last month, produced a beneficial effect upon New England mills to a greater degree than to those of the southern territory. An immediate increase in cotton consumption and in spindle activity in New England mills, to a much greater percentage than resulted in the South, was apparent. The southern mills, which had for years consumed by far the larger percentage of the cotton spun in this country, had during the first months of this spring been running at almost unprecedented levels of capacity, and statistics, while they should show an increase in the amount of cotton used by southern mills, should at the same time reveal a proportionately greater increase in New England mills, contributing to a total above that previously prevailing.

High productive capacity in the industry—June 1933 being at 129 per cent of single shift capacity for the industry, the highest figure on record—coupled

with the lag in increased purchasing power resulting from the delay in moving the country up toward textiles' position in the vanguard of code operation, plus the tremendous burden of the processing tax applied thus far to cotton but not to its competitive fibers, resulted in a congested market condition for textiles that slowed activity somewhat and created a feeling of concern among the members of the industry. It is now felt, however, that with the ability to get into the normal fall buying period (which should be accentuated as a result of the national blanket code effects), and with a reasonable policy on the part of the Agricultural Adjustment Administration with reference to the processing tax, the congestion will be relieved, and with adjustments having been made in market practice and price policies, a normal flow of goods will be approached.

Addition to Text of Code

On page 47 of the August issue, brief mention was made of a further amendment to the cotton-textile code providing for industrial relations boards. Since that time, General Johnson has named to comprise the Cotton Textile National Industrial Relations Board, to represent industry, labor and the public respectively, the three men who served so effectively on the temporary "stretch-out" investigation—Ben E. Geer, former cotton manufacturer and recently named president of Furman University, representing industry; George L. Berry, president of the International Pressmen's Union, representing labor; and Robert W. Bruere, of Columbia University, representing the public. The text of the addition to the code, which is to be Section 17, and which, it is felt, completes the code for the present at least, is appended as a matter of information and record:

XVII. To make proper provision with regard to the stretch-out (or specialization) system or any other problem of working conditions in the Cotton Textile Industry, it is provided:

1. There shall be constituted by appointment of the Administrator, a Cotton Textile National Industrial Relations Board, to be composed of three members, one to be nominated by the Cotton Textile Industry Committee to represent the employers, one to be nominated by the Labor Advisory Board of the National Recovery Administration to represent the employees and a third to be selected by the Administrator. This National Board shall be provided by the National Recovery Administration with a per diem for actual days engaged in its work and with such secretarial and expert technical assistance as it may require in the performance of its duties.

2. The Administrator, upon the nomination of the Cotton Textile National Industrial Relations Board shall appoint in each state in which the cotton textile industry operates, a State Cotton Textile Industrial Relations Board composed of three members, one of whom shall be selected from the employers of the cotton textile industry, one from the employees of the cotton textile industry and a third to represent the public.

3. Whenever, in any cotton textile mill, a controversy shall arise between employer and employees as to the stretch-out (or specialization) system or any other problem of working conditions, the employer and the employees may establish in such mill an Industrial Relations Committee chosen from the management and the employees of the mill and on which the employer and the employees shall have equal representation of not more than three representatives each. If such a committee is not otherwise established, the employer or the employees, or both, may apply to the State Industrial Relations Board for assistance and cooperation in the establishment in such mill of such industrial relations committee. The term of service of each such mill committee shall be limited to the adjustment of such controversy, or problem of working conditions for the adjustment of which the committee was created.

If the representatives of the employers and of the employees in such industrial relations committee are unable to arrive at an agreement, and united action with respect to such differences of opinion, the representatives of the employer or of the employees, or both, may appeal to the State Industrial Relations Board for cooperation and assistance in arriving at an agreement and united action.

It shall be the duty of such Industrial Relations Committee to endeavor to adjust such controversy. In cases where such committee reaches agreement with respect to any such controversy, such agreement shall be final except that it shall be submitted to the Cotton Textile National Industrial Relations Board for review and approval under such regulations as such National Board may establish.

This provision for such industrial relations committee within the particular mills shall be without prejudice to the freedom of association of employees and the other provisions of Section 7 of the Industrial Recovery Act.

4. It shall be the duty of the State Industrial Relations Boards, where their assistance is requested, as provided in sub-section 3, to cooperate with employers and employees in organizing industrial relations committees in individual cotton textile mills and to cooperate with such committees in the development of conference procedures and in the adjustment of differences of opinion with respect to the operation or introduction of the stretch-out system and other problems of working conditions.

In the event that the State Industrial Relations Board is unable to bring about agreement and united action of labor and management in a controversy so appealed to it, such State Industrial Relations Board shall present the controversy to the National Industrial Relations Board for hearing and final adjustment.

A Problem of Uncertainty

THERE are still some points in connection with the phraseology and intent of certain parts of the cotton-textile code which, many mill men feel, should be clarified by the proper authorities.

Everyone recognizes that the Cotton Textile Industry Committee, working under such tremendous pressure, could not interpret every item in the code promptly, but now that it has been put into operation with gratifying smoothness, it is felt that an authoritative statement with reference to the matter of improved equipment, and the changing of the status of different mill jobs, might properly be made.

The code includes a possible recommendation which may be made at a later date, looking to the registration of productive machinery and to prohibiting the installation of new productive equipment, except for replacement, without a certificate from the administrator. While the wording specifies productive machinery, many mills in their effort to carry out the spirit as well as the letter of the code, are, without official explanation otherwise, interpreting this to apply to other equipment of a supplementary nature. Many questions have arisen as to the advisability of installing this or that equipment of a more efficient character.

Certainly it would be incompatible with the greater spirit of NRA to frustrate the natural development of more efficient operation. General Johnson has been quoted: 'I think the necessary installation of new equipment should go forward. If you stopped inventiveness and progress, that would be very stupid." There is no incentive to spend money for better equipment which will produce more efficiently if no advantage can be taken of this efficiency.

5. The National Industrial Relations Board shall hear and finally determine all such questions brought before it on appeal by the State Industrial Relations Boards and certify its decisions to the Administrator and shall have authority to codify the experience of the industrial relations committees of the various mills and state boards with a view to establishing standards of general practice with respect to the stretch-out (or specialization) system or other problems of working conditions.

In order to clarify some of the definitions and provisions of the code, the Cotton Textile Industry Committee in August issued a statement which is quoted in part here:

"It is voted that the Cotton-Textile Institute communicate with all cotton mills and explain exactly the classes of labor definitely exempted from the minimum wage. These are as follows: Learners during six weeks apprenticeship; Cleaners; Outside employees.

"The Cotton Textile Industry Committee, in interpreting the Cotton textile code, adopted the following definitions:

Definition of "Cleaners", Etc.

"*Cleaners*—A cleaner is a person who does janitor service or one who cleans floors, buildings or machinery and does nothing else but clean.

(In connection with cleaners, a Georgia mill man who asked the Institute for an interpretation of the status of bobbin or quill cleaners, received the following reply from the secretary of the Institute, as announced by the Cotton Manufacturers Association of Georgia: "As to bobbin cleaners, they would come under the definition of 'cleaners' if they did nothing else but clean bobbins. If on the other hand, they perform additional functions that come under the provisions of the minimum wage, they could not properly be classified as cleaners.")

"*Outside Workers*—Outside workers embrace those who work outside of the mill, such as employees in the mill yard, warehouses, waste houses and also gate keepers and those who operate trucks and drays.

"*Office Workers*—Office workers under the cotton textile code include those working in central and branch offices of cotton mills wherever located.

"*Supervisory Staff*—The supervisory staff, under the cotton textile code, includes all who direct the activity of others, such as executives, superintendents, paymasters, foremen, overseers and second hands.

"*Shipping Crews*—Shipping crews under the cotton textile code embrace employees who handle goods after they are packed and handle incoming shipments."

The Institute secretary also reported the following resolution, with reference to the increased cost of goods manufactured under the provisions of the code, which had been passed by the Cotton Textile Industry Committee.

"Resolved, That in conformity with the provisions and spirit of the Cotton Textile Code, approved by the President under the National Recovery Act: (a) all goods sold prior to May 17, 1933, and manufactured on and after July 17, 1933, should bear the increased cost resulting from the operation of that Code, and (b) there should be no exceptions unless an understanding or agreement to the contrary were made at the time of sale."

The Committee voted that the General Arbitration Council of the Textile Industry be recommended to act for the Cotton Textile Industry Committee in such cases as are referred to it for arbitration under Clause VII of the code, provided this procedure is acceptable to both parties.

The Cotton Textile Industry Committee announced early in August the personnel of the sub-committees appointed by Chairman George A. Sloan, after consultation with the presidents of the National Association of Cotton Manufacturers and the American Cotton Manufacturers Association. These appointments, and the functions of the various committees, follow:

The Industry's Sub-Committees

1. *Working Conditions Committee*—Donald Comer, Ernest N. Hood, T. M. Marchant, Frank I. Neild, Robert R. West.

This Committee has been designated for the purpose of cooperating with the Government in matters concerning "stretch out" (or specialization) system or other problems of working conditions in the Cotton Textile Industry.

2. *Processing Tax Committee*—Cason J. Callaway, (Chairman) Harry L. Bailey, G. Edward Buxton, Charles A. Cannon.

This Committee will cooperate with the Department of Agriculture and Bureau of Internal Revenue.

3. *Plant Extension Committee*—B. B. Gossett, (Chairman), Wm. D. Anderson, G. Edward Buxton, Alfred E. Colby.

This committee was designated to aid in the administration of Section VI of the Code, paragraph 3, which refers to the matter of registering productive machinery in the industry and, where additional productive machinery is contemplated, the requirement of certificates from the Administrator for such installation (except for the replacement of a similar number of existing spindles or looms or to bring the operation of existing productive machinery into balance.)

4. *Committee on Mill Villages*—Stuart W. Cramer, (Chairman) Wm. D. Anderson, Donald Comer, R. E. Henry, Frank I. Neild, Robert R. West.

This Committee was appointed to aid in carrying out Clause XI of the Code, which refers to a report, to be submitted prior to January 1, 1934, on the subject of employee ownership of homes in mill villages.

5. *Committee on Amendments to Code, and Supplementary Codes*—G. Edward Buxton (Chairman), Alfred E. Colby, B. B. Gossett, R. E. Henry, George A. Sloan.

Clause X of the Code leaves the way open for changes in the Code as experience may dictate and for additional Codes. The above named Committee was appointed to consider and make its recommendations on all such proposals.

6. *Merchandising Committee*—G. H. Milliken (Chairman) Robert Amory, Morgan Butler (honorary member), Charles A. Cannon, Donald Comer.

The above Committee was appointed for the purpose of considering fair trade practices in the marketing of cotton textiles that should be recommended for inclusion in the Code.

7. *Complaint Committee*—George A. Sloan (Chairman), Robert Amory, Stuart W. Cramer, Ernest N. Hood, T. M. Marchant.

It will be the duty of this Committee under the provisions of Section VI of the Code to cooperate with the Administrator in making investigations as to the functioning and observance of the provisions of this Code and report the result of the same to the Administrator. It was unanimously voted that the Committee will be assisted by the management and the field force of the Cotton-Textile Institute, Inc.

8. *Export Committee* — Harry L. Bailey (Chairman), Bertram H. Borden, Donald Comer, G. H. Milliken.

This Committee was appointed for the purpose of cooperating with the officials of the Textile Export Association of the United States in laying before appropriate Governmental agencies the present problems of the export trade in cotton goods and to determine what, if any, assistance might be rendered by the Government in preserving such business.

As members of the first industry to leave the post in the matter of industry codes, the readers are likely to become immersed in the immediate and pressing problems of code application—not mentioning the processing tax!—as to lose the proper perspective of the National Industrial Recovery Act and its administration. For this reason, the article by Mr. Marsden is used on page 25 of this issue, and is recommended for study and thought by the textile manufacturer.

The Cotton Processing Tax

Public hearing on tax, announced for Sept. 7th, indefinitely postponed at the request of Cotton Textile Industry Committee . . .

AFTER two weeks of operation under the code of fair competition during which time the fundamental problems of its application were being successfully ironed out, the cotton-textile industry was confronted with an equally serious problem of a different nature in the processing tax of 4.2 cents per pound on cotton, applied by Secretary of Agriculture Wallace under the Agricultural Adjustment Act, effective August 1st. As reported in the August issue, the mills were required to pay this tax, as the first domestic processors of the cotton, on all cotton processed on and after August 1, and was to be paid within 30 days. A conversion factor was applied to floor stocks, which included stock in process, making the tax on floor stocks 4.4184 cents per pound.

The application of the tax immediately created the necessity of tremendous increase in operating capital on the part of the mills, and otherwise hampered mill activity, and also affected the market condition of cotton-textiles. Representatives of the Cotton Textile Industry Committee, and others, immediately began making application for relief, and about the middle of August, as a result of these appeals, the Bureau of Internal Revenue, charged under the Act with the collection of the tax, issued an order extending the time limit for paying the floor stock tax on floor stocks of cotton goods (as of August 1) on the following basis: ¼ of floor tax on floor stocks to be paid at time of filing return (not later than September 1); ¼ within 30 days after filing of return; ¼ within 60 days after filing of return; and ¼ within 90 days after filing of return.

Mills were also granted the privilege of applying for a 90-day extension of the time within which to pay the tax on cotton stocks in process as of August 1, when made in the form of an affidavit and submitted in accordance with the provisions of Article 17, of Regulation 82.

The order also provides for an extension of time on payment of part of the processing tax of 4.2 cents. One-third must be paid when the return is filed, one-third within thirty days after the due date, and one-third within sixty days after the due date. As an example, returns covering cotton opened during the month of August had to be filed not later than September 30, and one-third of the tax due paid with the return; one-third paid not later than October 30, and the remaining one-third not later than November 29. The same schedule applying for the succeeding five months.

It was understood that there was to be no interest charge made on these deferred payments, authorized by the Treasury Department, which of course, makes no interest charge on deferred payments on income taxes.

The public hearing on the processing tax, originally scheduled for September 7, was postponed at the request of George A. Sloan until such date as manufacturers are in better position to present authoritative data.

Since the portion of the tax on stock in process was in effect to amount to a loan to the government, without interest—to be repaid at the end of the emergency period, it was felt that the tax on this would be removed. Meanwhile, most mills had made the initial payment of one-fourth of the total floor stock tax on stock in process and finished goods, with the privilege of a final return within 30 days, when action on the tax on stock in process would have been taken.

As a matter of record and information, the Treasury Department Order No. 4385 covering these postponements, etc., with reference to the payment of the processing tax and floor stock tax with respect to cotton, as approved on August 17, is reproduced below:

Postponement of payment of processing tax and floor stock tax with respect to cotton.

Payment of processing tax with respect to cotton authorized to be made in installments of one-third of the amount due on each return for the first six months on or before the due date for filing such return; one-third not later than thirty days after the due date, and one-third not later than sixty days after the due date. Payment of tax on floor stocks of cotton products authorized to be made in installments of one-fourth of the amount due on each return on or before the due date for filing each such return; one-fourth not later than thirty days after the due date; one-fourth not later than sixty days after the due date, and one-fourth not later than ninety days after the due date.

TREASURY DEPARTMENT
Office of Commissioner of Internal Revenue
Washington, D. C.

TO COLLECTORS OF INTERNAL REVENUE AND OTHERS CONCERNED:

Payment of processing tax with respect to cotton under the provisions of T. D. 4377 approved July 29, 1933, and the provisions of Article 12 of Regulations 81 relating to processing tax under the Agricultural Adjustment Act, is hereby authorized to be made as follows:

One-third of the amount of the tax must be paid on or before the due date for filing each return for the first six months, one-third not later than thirty days after the due date, and one-third not later than sixty days after the due date. Payment of each installment of one-third of the amount of the tax shown on each month's return will be due as follows:

Return	Aug. 1933	Sept. 1933	Oct. 1933	Nov. 1933	Dec. 1933	Jan. 1933
⅓—due date ..	Sept. 30	Oct. 31	Nov. 30	Dec. 31	Jan. 31	Feb. 28
⅓—30 days after due date	Oct. 30	Nov. 30	Dec. 30	Jan. 30	Mar. 2	Mar. 30
⅓—60 days after due date	Nov. 29	Dec. 30	Jan. 29	Mar. 1	Apr. 1	Apr. 29

Payment of the tax on floor stocks of articles processed wholly or in chief value from cotton under the provisions of the Treasury Decision above named, and Article 17 of Regulations 82 relating to tax on floor stocks, is hereby extended as follows:

With respect to the amount of tax due on return on P.T. Form 32, one-fourth must be paid on or before the due date for filing returns, August 31, 1933, one-fourth not later than thirty days after the due date, or September 30, 1933, one-fourth not later than sixty days after the due date, or October 30, 1933, and one-fourth not later than ninety days after the due date, or November 29, 1933. With respect to the amount of tax due on return P.T. Form 42, one-fourth must be paid on or before the due date for filing returns, September, 30, 1933, one-fourth not later than thirty days after the due date, or October 30, 1933, one-fourth not later than sixty days after the due date, or November 29, 1933, and one-fourth not later than ninety days after the due date, or December 29, 1933.

These extensions apply only to payment of the tax and not to the time for filing each return.

Pre-Determining Roller Settings

A method of determination without interfering with the regular mill operations; particularly useful in the card room . . .

By Houston Randolph

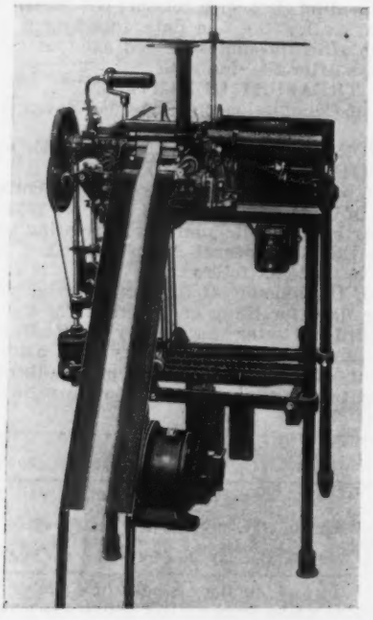
THE necessity of correct roller settings is fully recognized by all cotton manufacturers, but owing to the trouble and labor involved in setting drafting rollers, and the necessary tests of the finished yarn afterward, many an overseer hesitates to change roller settings as often as he believes would be advisable.

In the July 1932 issue of COTTON, an article by H. H. Willis dealt directly with roller spacings and showed in conclusion the financial advantages and savings possible in a mill if the matter of correct roller setting was given full attention.

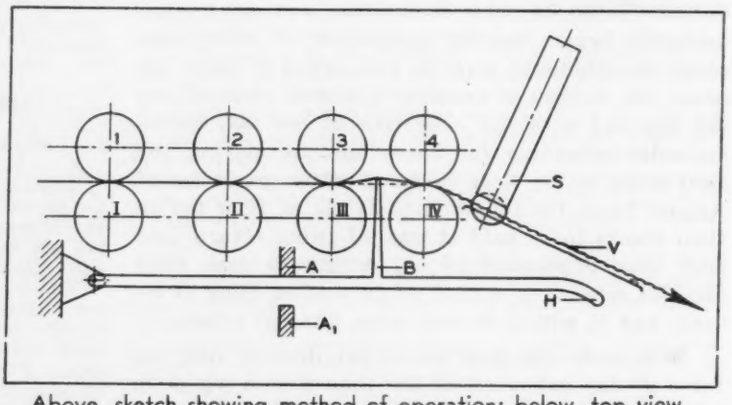
On a spinning frame with the regular three lines of saddle and lever weighted rollers, the correct roller spacing can be found without any trouble. Too close a setting of the drafting rollers produces the dreaded "cockled" yarn; and too wide a setting reduces the breaking strength. As the finished yarn can be directly tested for size and break, it does not entail any great length of time to find the correct roller settings for a ring spinning frame under given conditions of hank roving, draft, staple and character of cotton.

In the card room, however, where a much greater bulk of fibers has to be drafted on drawing frames, combers, and roving frames, the determination of the correct roller spacing becomes a real problem. As in many other manufacturing establishments, the "cut-and-try" or "rule-of-thumb" method is from time to time being superseded by scientific research founded upon basic engineering principles.

An interesting principle is applied in the development of a method of determining the roll settings, an installation of which was recently inspected, the principle of which is to show correctly, within a few minutes, the proper roll spacing for cotton under different conditions. A view of such a device, equipped with a show board down which the sliver slides as it emerges and thus shows the results of different drafts, weights, etc., is shown herewith. A top view of the draft gearing of the machine, with the cover removed, is also shown. Through the mechanism shown, roller settings, drafts and weights can be changed by means of levers and cranks while the instrument is running without stopping, and without calculations. The sketch shows the principle of the mechanism. The roving V runs through the drafting rollers I/1 to IV/4. The tension lever *B* may be raised to the stop *A* or lowered to the stop A1. In its raised position, the sliver or roving is lifted up and therefore the draft resistance is increased between the front roller and the one next to it. If therefore the

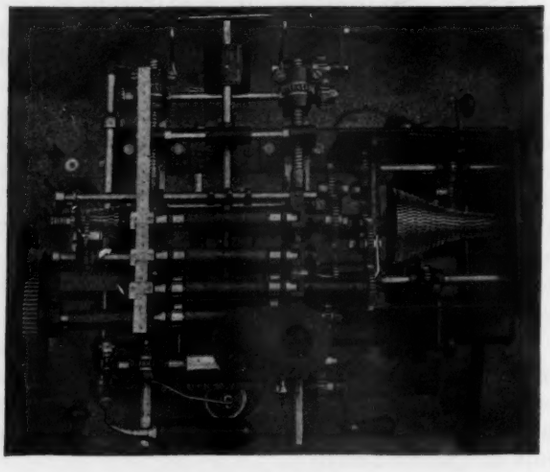


Roll Spacing Determinator



Above, sketch showing method of operation; below, top view of roller arrangement of device . . . . . .

Photos, courtesy The Belger Co.



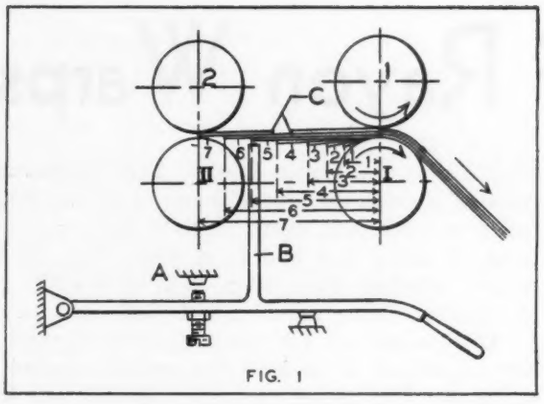


FIG. 1

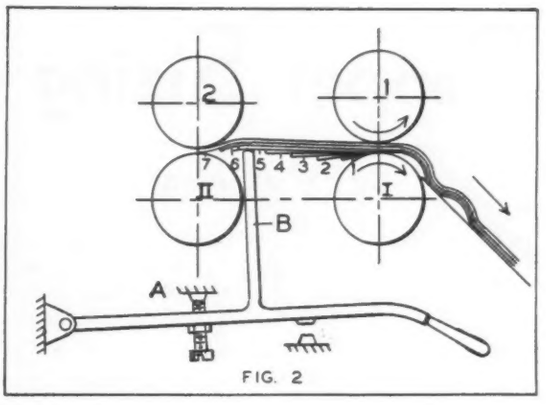


FIG. 2

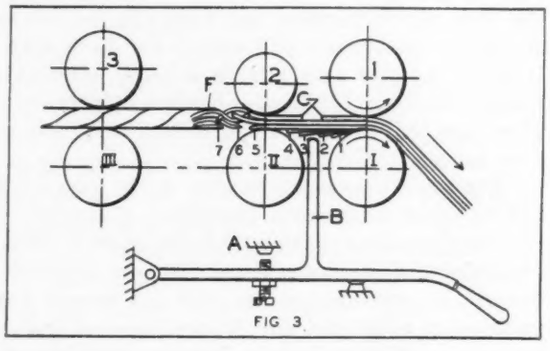


FIG 3

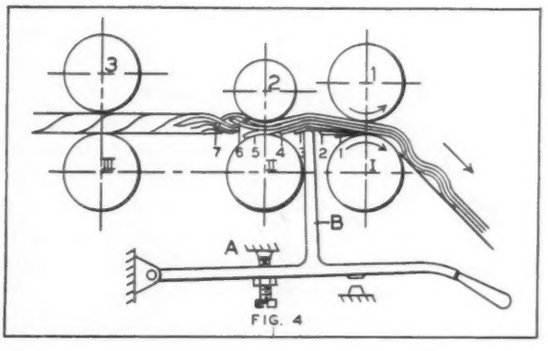


FIG. 4

tension lever *B* is raised and the rollers are set too close, a "wave" or even a stopping of the fibers will be noticed through the viewing device *S*. By changing the roller settings with cranks while the machine is running, the proper spacing is found when by either raised or lowered tension lever no "wave" or stoppage of the fibers occurs, and no change can be noticed through the viewing device.

The Influence of Roll Settings

Some interesting explanations as to the theory of the influence of different roll settings may be presented in connection with the theory of the machine.

In the illustrations Fig. 1 to Fig. 4 inclusive is located, between the two pairs of drafting rollers II-2 and I-1, a strand of fibers consisting of different lengths of fibers, 1, 2, 3, 4, 5, 6, and 7. In Fig. 1 the long fibers 7 are held simultaneously by both pairs of drafting rollers II-2 and I-1. By means of the draft, these fibers are being stretched and they will break after reaching their limits of elasticity at point *C*. At first they will run with a slower speed through the bite I-1 until after the break, then they will run with the same speed as the remaining fibers 1 to 6 inclusive. The fibers 7 being only a small percentage of the total fibers will cause no curls or waves although the roll setting is too close.

However, if the tension lever *B* is lifted to the stop *A*, Fig. 2, the number of the fibers retarded is suddenly increased by the bending of the fibers in the final drafting fields where fibers 5 and 6 are pressed against fibers 7. After the space between II-2 and I-1 has been increased so that the long fibers are not held any more by II-2, the action of the lifted tension lever will cause no definite retardation and therefore no curling or waving will be found. If one would try without the help of the tension lever and only by means of decreasing the bite to secure the same curls or waves, the two pairs of drafting rolls II-2 and I-1 would have to be set closer. Therefore, the setting without a tension lever would be inaccurate and not as sensitive.

With drafting rollers arranged for slip-draft, the middle roll 2, Fig. 3, is self-weighted, therefore it causes less pressure on the fibers, and the pairs of drafting rollers II-2 and I-1 can be set closer. The long fibers are slipped through roll 3 and are drawn out of the twisted roving *F*. The twist in the roving therefore acts as a kind of anchor for the long fibers 6 and 7. The long fibers 7 would break at *C*, Fig. 3, if this anchoring of the long fibers together with the pressure of the slip-draft roll 3 should be too much. However, even in this case no curling or waving action would result, as the number of long fibers 7 is not of sufficient quantity. But if one raises the tension lever in this drafting field, fibers 3, 4, 5, and 6 are pressed by this tension lever against the securely held fibers 7. The draft resistance is suddenly increased to a great extent and the curls appear at once. It is therefore again clearly shown that the tension lever is remarkably sensitive upon the draft resistance of the fibers.

Many a spinner believes that with years of experience and "feel" for the correct setting of drafting rolls, that his individual experience is sufficient. This accounts for the fact that one frequently finds a great deal of difference in comparing the roller settings of well known and experienced spinners, on the same kind of rollers and cotton. The possibilities of a method of determining accurately the one correct position under any given conditions are interesting.

Proper Sizing of Rayon Warps

By Phil A. Ment

PRACTICAL suggestions, based on experience, are given with reference to sizing viscose and acetate rayon warps in this continuation of the series on "Practical Rayon Handling in a Weaving Mill." The two previous articles covering all of the processes involved are available to readers who request copies of them.

The next and concluding installment will deal specifically with weaving, loom settings, etc., etc.

IT goes without saying that a large part of the information offered herewith has been presented previously. Much has been written for publication, or offered in speeches at various gatherings, regarding the different methods of sizing rayons in use today. Nevertheless, at the request of COTTON, this is offered in the hope that a few of the manufacturers in the rayon game during these troubled times may derive some benefit from an account of one man's practices and research.

Since this is written from experience on the viscose and acetate yarns mostly, discussion will be confined to these two types. For cupra-ammonium yarns some better-informed source should be consulted, although it has been our good fortune to achieve fairly good results by treating this type yarn along the same lines as the acetates.

It has been found that the viscose yarns are peculiarly sensitive to moisture or water solutions, while the acetate yarns act in precisely the opposite manner. It follows, then, that in setting up a diverse system of size impregnation that one is merely catering to the natural tendencies of the yarn involved. Also, viscose yarns are extremely liable to stretch when even slightly damp, while acetate yarns are only moderately sensitive to moist conditions. Armed with only a few facts, such as the foregoing, any intelligent manufacturer is capable of formulating the sizing procedure most suitable for his own needs.

In laying out a plan it is first necessary to consider the requirements of the cloth and the subsequent handling of the woven goods. First consideration must be given to the type of goods to be run. Whether heavy or light pick, heavy or light sley, or combinations of heavy sley and light pick, etc. Then the weave: whether plain, satin, twill or novelty. Also, the type of filling required will play some part.

The general rule for size application, derived from our experience, is to hold the amount applied to a minimum; but taking care that enough and just a little more is put on so that the combined rubbing of the drop wires, harness and reed will not cause the size to be beaten off and expose the bare yarn. It is better to play safe and be a heavy sizer than to gamble with uncertainty. Besides, plenty of size gives just that much more advantage to a weaver and pays for itself in better cloth.

For some time weavers as a whole have been the unwitting tools of cheap finishers. Too much pressure has been brought to bear on the mills by finishers complaining that size removal has been difficult and costly. In consequence, the poor old weaver has experimented with light size proportions and trick compounds, in order to favor a finisher, until his quality suffers as the final result. There is only one answer to this. Size properly, weave well, and select the finisher to do a justifiable job on the goods.

Before proceeding further, let us have a look at the various types of sizing machines and methods of taping in the yarn sheet. For general work, the combination of cotton and rayon slasher seems to give the best results. This machine is a hybrid evolved by enterprising slasher men to combine the outstanding features of both the cotton slasher and the rayon sizer; and consists of a three or five drum rayon machine backed by a beam creel and equipped with a lease rod arrangement in front. It offers low cost operation, lower drying temperature, more combinations of nip, single and three-roll squeeze, an easy split of the yarn sheet, and the ability to use flanged beams of almost any width by means of the expansion comb. Heavier sizing is permissible, due to the easy use of leasing rods; and, if the warp is papered well and struck neatly with a fine dent comb, warps may be drawn in straight enough for weaves with a fairly

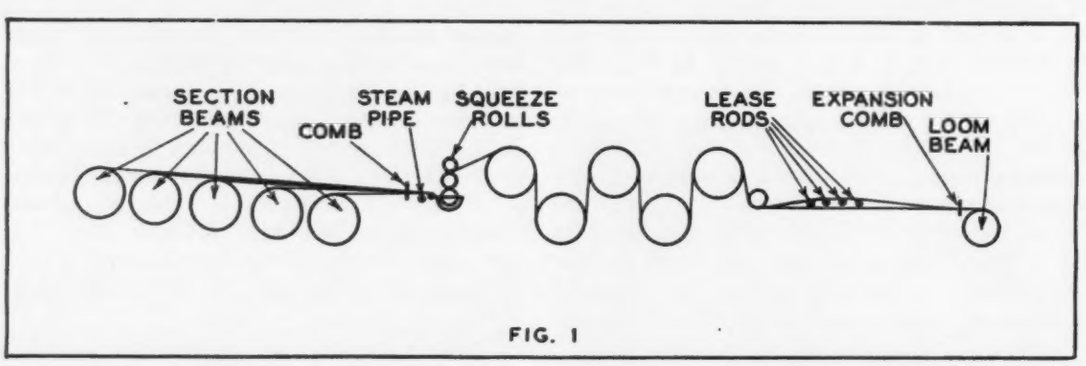


FIG. 1

high sley. A sketch of this type of machine is given in Fig. 1. The beam creel is shown as a single tier, though some mills use a double tier for saving floor space. This latter arrangement has an upper and lower rack and the users argue that a better lay-in at the comb is possible. Ball or roller bearing beam journals are of great advantage on creels, especially in warping long sets. The steam pipe shown between the comb and size pan is used for giving the yarn sheet a slight initial dampening. Low pressure steam emits through closely spaced holes, or even a slot running lengthwise of the pipe, and precipitates a small amount of moisture on the yarn, thus aiding size penetration. This is particularly advantageous when sizing acetate fibers.

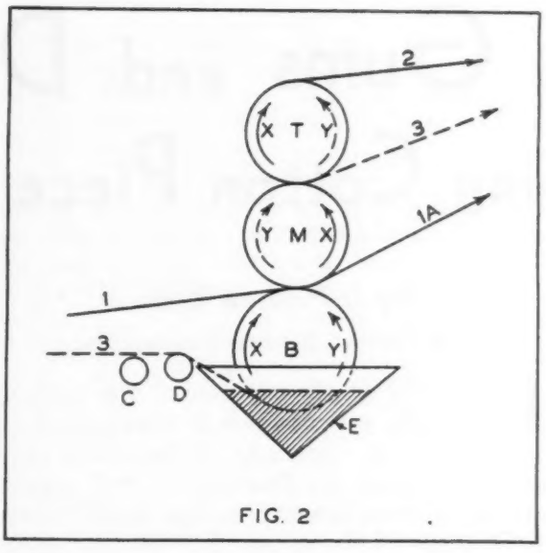


FIG. 2

The squeeze rolls as shown are usually made with the top and bottom rolls of copper, while the middle roll is generally of soft rubber. In Fig. 2 an enlarged view of these rolls is shown, in order to illustrate the various threadings and reasons for each. The solid line threading is the most commonly used on viscose yarn. In order to gain size impregnation, the middle roll is sometimes covered with a heavy wool jacket, woven tubular, and made of convenient size to shrink on the rubber roll. It is claimed that these wool jackets act as a sponge and effect a better coating of the size on the yarn sheet than is secured with the bare rubber. It is also argued the amount of squeeze has more to do with getting the desired penetration than any substitute factor, and efforts have been put forward to make the amount of squeeze a controllable quality. One method is the substitution of a set of weight levers, with adjustable pea or block weights, in place of the usual hand wheel and worm shaft arrangement that is generally used to bring the rolls into nip. In case this is not clear, a short explanation may be of some help.

The three squeeze rolls are usually mounted, each end on vertical worm shafts. Another shaft, actuated by a hand wheel, connects to both worms and raises or lowers the rolls; thereby making or breaking the nip. By disconnecting the handwheel drive and substituting a direct acting lever that, when weighted, presses downward on the rolls, the amount of squeeze can be controlled and results judged accordingly. The merits of this are matters of result and opinion.

Getting back to threading the yarn sheet, we find that the solid line (1) has two outlets. One is shown at (1a) and the other at (2). Obviously the threading of (2) is merely for additional squeeze. Either of these, with or without the wool jacketed middle roll, is used on viscose yarns with good success; due to the fact, as heretofore mentioned, that viscose is readily size absorbent and needs only a quick, even contact with the size solution in order to allow sufficient penetration. Also, the viscose yarns stretch easily when wet and the feed at (1) puts the heavy strain on the yarn while it is yet dry. The dampened yarn (viscose) must be taken directly to the dry can as quickly as possible in order to minimize the wet handling, and for this reason, the threading at (1) would seem to be the more desirable provided sufficient absorption is gained. The rotation of the rolls is shown by the solid arrows (X), thereby giving a straight through delivery.

In sizing acetate yarns, the threading is exactly opposite to that used on the viscose. Since acetate is resistant to size solutions, it is best to run the sheet into the size bath as shown by the dotted line (3). With the direction of rotation of the rolls changed, as shown by the dotted arrows (Y), the yarn sheet gets a thorough impregnation and twice the squeeze generally given to the viscose yarns. Also, since acetate is considerably less subject to stretching when wet, the sheet can be pulled entirely wet with little danger of excessive stretch.

Right here, it would perhaps be well to make a few points regarding the amount of extension given to normal yarn. The ideal procedure, of course, would be to size with zero stretch; but this is hardly possible. Enough tension should be applied to keep the ends coming through in a firm, even sheet, and more tension than this is not only unnecessary, but dangerous. The practice of gaining a few yards of cloth, or trying to put as many yards as possible on one beam, leads to troubles that are hard to overcome. Endeavor to limit the amounts of stretch to not over four per cent on the acetate fibers and seven per cent on viscose, lower if possible. These amounts are affected by the warping, and the more evenly this process is carried out the less will be the trouble in regulating the stretch.

In Fig. 2, the dampening roll is shown at *C*, and the size level indicated by the lined section of the size pan *E*. A guide roller *D* keeps the yarn sheet from running against the edge of the pan.

The speed of the delivery varies, of course, with the amount of yarn going through; and should be governed entirely by the amount of size *left in* the yarn, since this is the ultimate aim of sizing. Simply because a sheet of warp is running through nicely at 18 yards per minute does not justify this speed if the yarn is only partly sized. Usually, the acetate yarns, weight for weight, can only be run at about two-thirds the speed of viscose warps.

One very good feature of the five-drum machine is

(Continued on page 48.)

Starches, Gums and Dextrines In Finishing Cotton Piece Goods

By J. Andrew Clark

Chief Chemist, Dutchess Bleachery, Inc.

IN this, the fourth installment, the author covers the various kinds of starches, etc., as a group in his study of the basic raw materials used in finishing cotton piece goods. The three previous installments have covered Water and Softeners of various kinds. Readers interested in copies of the preceding articles in this series are invited to inquire for reprints . . . . .

MOST fabrics after bleaching or dyeing do not have the desired market feel or appearance, and while softening some types will produce this effect, it may be necessary to stiffen and fill others. The various starches, gums and dextrines are usually employed for this purpose with the possible addition of softeners and minerals such as clay, talc and other fillers when additional weight is desired. The application of these various materials is an art, the development of which has been based on the experience and intelligence of the finisher, coupled with the availability of suitable machinery and his appreciation of its proper use.

Like most of the industrial arts, finishing has long resisted the directing influence of scientific control and as a result only very little, except in a general way, is known definitely about the properties of starches in producing specific effects. The monetary importance of starch and its products may well be emphasized by the statement of one authority that half of all the starch produced is used in the textile industry, while another claims that the value of the starches used in the textile trade exceeds the sum expended for all other chemicals in this same field. It is not surprising, therefore, that considerable research is now being conducted scientifically to determine methods of evaluation of the various starches as well as their adaptability to specific uses in finishing.

Many misleading comparisons of relative value of the several starches have crept into the literature, probably because of the difficulty in the past of expressing the properties of different starches on a common basis.

Description of Starch

Starch occurs widely distributed in nature and is found in all plants to a greater or less amount. It is a glistening white, tasteless and odorless powder which normally contains 15 to 18 per cent moisture in the air dry condition. When viewed under a microscope, it is seen to consist of small granules, which, in general, show characteristic shapes and sizes for each different kind of starch. When viewed with polarized light, however, the granule of unboiled starch is generally bright and quartered with a well defined dark cross, which becomes less distinct when the starch is boiled and may completely disappear from the ruptured granules. These granules are carbohydrates consisting of an outer insoluble layer of several membranes, resembling cellulose chemically, which enclose an interior material called granulose.

The granules of raw starch are insoluble in cold water but on treatment with hot water, swell and burst the outer membranes with the formation of thick, gelatinous and colloidal solutions. This bursting temperature is characteristic of most starches within fairly narrow limits and the burst envelopes or membranes can readily be observed with the microscope. It is not an instantaneous reaction, however, for after this temperature is reached, a short time is required for the complete bursting of all granules. This progressive action is explained by one authority as due to the difference in age of the granules, the older being the more resistant.

Granulose is readily soluble in warm water, while the membranes of starch-cellulose are not. This can readily be demonstrated by adding iodine solution to some boiled starch and viewing it with a microscope. The solution of granulose will show the characteristic blue color whereas the envelope will be stained a dull yellow. The ratio of granulose to starch-cellulose in the granule has been held by some investigators to be the reason for the differences in the behavior of the various starches.

When cool, the starch solution stiffens to form a jell, that on standing, gradually breaks down to deposit an insoluble form and separates a clear, supernatant liquor containing soluble starch. This action is retarded somewhat by the presence of small amounts of alkali, while traces of acids accelerate it. Bacteria and moulds, moreover, attack starch pastes under favorable conditions especially if nitrogenous matter from traces of gluten are present.

Heermann gives bursting temperatures for the various starches as follows: Wheat—65 degrees C.; corn—70 degrees; sago—72 degrees; potato—63 degrees; rice—74 degrees.

Incomplete boiling in making the mix for finishing leads to lack of adhesiveness, especially in heavy formulae; one reason for dusting, which is often erroneously thought of as due to overloading the mix

with mineral fillers.

The time of boiling is of primary importance, again, since the viscosity of starch solutions is modified greatly as a function of the time. Potato starch, for instance, loses viscosity rapidly, while corn increases for some little time. This factor is, therefore, of great importance in both the practical application as well as in the testing of these materials.

McNider, *Journal of Ind. and Eng. Chem.* Vol. 4, No. 6, 1912, gives the following table of viscosities based on a 4 per cent solution of starch, boiled ten minutes:

Corn	2.49
Corn	2.86
Corn	2.73
Potato	14.31
Tapioca	3.88
Tapioca	3.97
Wheat	1.26
Wheat	1.24
Rice	1.00

From this table, it can be seen that potato has nearly five times the viscosity of corn, four times that of tapioca and eight times that of wheat. Sago was not listed in the above table but has a viscosity of 1.57. When boiled for thirty minutes, though, the viscosities are:

Corn	7
Potato	6.33
Tapioca	4.17
Wheat	1.33

From this, we see, then, that potato starch loses practically one-half of its viscosity after boiling an additional twenty minutes, while that of corn is nearly tripled in the same time. Tapioca, wheat and sago are only slightly changed under these conditions. This change in viscosity, therefore, can easily cause variation in finish from the standard when supervision of boiling is lax during preparation of the starch mix. Uniformity of procedure especially with mixes containing corn and potato will go far in preventing goods from coming up too soft or too stiff after starching, since overboiling thins a potato and thickens a corn formula.

Acids, alkalis, a few metallic salts and some oxidizing agents, as well as enzymes are capable of reacting with the various starches to alter their physical and chemical characteristics. Starch is progressively degraded when boiled with dilute mineral acids, first forming dextrine and finally glucose, as described in an earlier article. This same reaction can be carried out by heating with small amounts of the dilute acid and with careful control, various types of dextrines can be obtained, most of which, however, consist of mixtures with small amounts of glucose. So-called soluble forms of starch, however, can be obtained by suspending this in dilute hydrochloric acid for 24 hours at ordinary temperatures, followed by washing to remove the acid.

During the late war, hand grenades were loaded to some extent with nitro-starch obtained by the reaction with strong nitric and sulphuric acids. Hot nitric, however, reacts to form oxalic acid while concentrated sulphuric first dissolves and then chars starch.

Dilute caustic soda gelatinizes starch to form a clear transparent paste at ordinary temperatures. This product retains essentially the same characteristics after neutralization with acid, such as acetic or sulphuric, and has been used for some time in finishing to produce a crisp organdie finish without window-paning. Bean claims that boiling starch with water containing ¼ per cent caustic soda produces a thicker and more adhesive paste than is formed when only water is used. Experiments conducted by McNider, however, would show that the viscosity decreases at first with small additions in the order of .02 per cent but that a larger amount increases this property. Small amounts of borax or other salts having an alkaline hydrolosis also produce this effect. Larger amounts of borax, however, cause the paste to become rubbery and lose its power of adhesiveness to such an extent that a ball of it can be handled without sticking.

Oxidizing agents of most all types react with starch to form soluble modifications which have lower viscosities than the raw starch. Hyperchlorites, chlorine, ozone, persulphates, peroxides, activin and such, are capable of this reaction. In one example of European practice, it is said that chlorination is conducted by suspending the starch in an organic solvent containing dissolved chlorine, followed by removal of the solvent. Processing starch to bleach it, therefore, results in a lower viscosity than would be obtained from the natural product, through the formation of small amounts of the soluble variety from the raw starch.

These soluble products, moreover, retain to a great degree the characteristics of the raw starch from which they were made.

Starch is precipitated by dilute solutions of calcium, barium and strontium hydroxides, as well as by calcium magnesium and zinc chlorides. These form white products which fail to develop the characteristic blue color with iodine. The reaction with barium hydroxide is quantitative and has been used as a means for the analysis of starch. Extremely thick and adhesive solutions are formed when concentrated solutions of these chlorides react with starch and when boiled, convert it to a soluble form. One such product offered commercially as a weighting gum tested as 50 per cent water, 25 per cent calcium chloride and 25 per cent starch. This was an extremely firm, rubbery compound, and not at all suggestive of its high water content.

Starches are acted upon by many enzymes to form degradation products. The enzymes are organic catalysts secreted by various molds and bacteria as well as in special glands of animals. The so-called amylolytic enzymes convert starch to sugars, dextrine and soluble starch, and are sold under several well-known trade names. These products, however, differ somewhat in the end-products formed and in the optimum temperature and pH of their solutions. Excessive heat affects their vitality, all having lethal temperatures somewhat below the boil.

Thin boiling starches have been offered consisting of starch with an extremely small amount of such an enzyme added to it. These preparations added to the mix are heated for definite periods of time at a fixed temperature dependent, of course, on the particular enzyme employed. At the end of this period, the mix is to be rapidly brought to a boil and maintained there for a few minutes, to complete the mix and destroy the enzyme. The difficulty in using this type of product comes in the maintenance of definite and uniform temperature control with semi-skilled and unskilled labor. Variations in time, temperature and pH cause changes in the ratio of soluble starch and dextrine formed as well as the amounts, which would lead to irregularities in the final finish. In plants which finish a variety of fabrics of relatively small yardage, this time element may place an additional handicap on the finishing department in making up a relatively large number of small batches. These products find practical use in de-sizing grey cloth in the preliminary operations of bleaching as well as in the removal of finishing materials for refinishing or redyeing. The quench box following singeing is one place commonly used for this operation if a liquid quench is used. Dilute solutions of between ½ to 1 per cent are used and may be fed in continuously. Loss in activity may occur through elevation of the temperature of the solution by heat absorbed from the hot cloth leaving the singer. This can be guarded against ordinarily by using a feed with sufficiently low temperature.

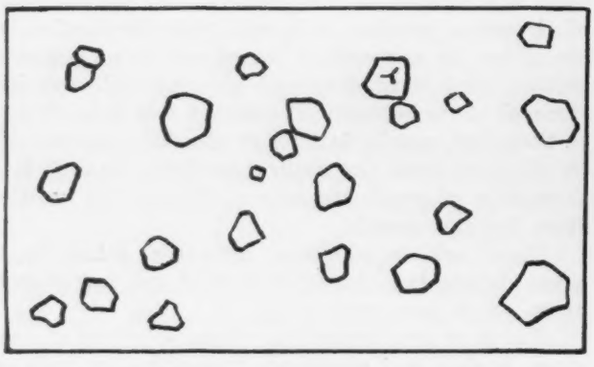
Raw, boiled or soluble starch shows a characteristic reaction with dilute solutions of iodine to form a dark violet-blue color, which disappears on gentle heating and reappears on cooling. While the iodine does not color the starch cellulose blue, it is able to penetrate this in the case of raw starch and combines with the granulose inside. Dextrines and British gums are formed by heating starch at various temperatures above 280 degrees F. With low temperatures and short periods of treatment, white or yellow dextrines containing considerable soluble starch are formed. These products, however, are only slightly changed in appearance under the microscope and appear essentially the same as the raw starch. Conversely, higher temperatures and longer time yields darker products which, although containing practically no soluble starch, have a relatively high glucose content, some caramel and other products of undetermined composition.

Of the various starches used for finishing in American practice, corn, potato, tapioca and sago predominate. Some little wheat starch and flour finds use for special purposes, while rice can barely be considered as a finishing starch because of its restricted use.

The raw materials for the manufacture of starch differ considerably both in the associated impurities and the physical nature of the plant cells enclosing the starch. This necessitates differences in the manufacturing processes, especially in the earlier stages, some starches being separated mechanically, while others need chemical treatment for best results. An extended description of the manufacture of each starch would be altogether too encyclopedical and outside the scope of this article.

The kernel or seed of the maize or Indian corn plant is the raw material from which corn starch is manufactured. The shelled corn is first steeped at approximately 120 degrees F. in very dilute sulphur dioxide solution until softened, after which it is washed and cracked in special mills. The germ is next removed by a flotation and skimming operation, owing to its low specific gravity, while the remainder of the hull sinks. The germ is used for the source of corn oil of which it contains approximately 50 per cent.

The drawings in this article were all made to the same magnification, for comparative purposes, with a B. & L. camera lucida



1. Corn starch: angular granules; .02-.03 mm dia. Star shaped hilum. Magnification, 370X. . . .

2. Corn starch granules as seen under polarized light. Magnification, 370X . . . . . .

Manufacture of Corn Starch

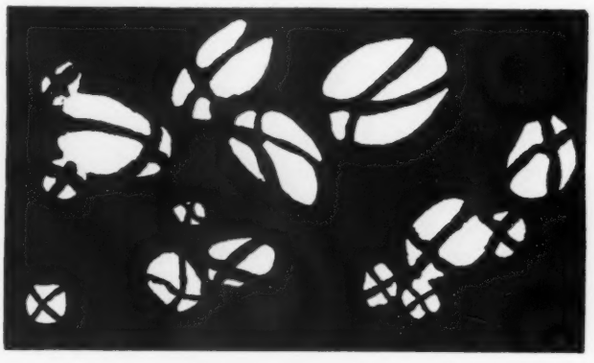
The hulls are next separated from the cracked grain, by repeated treatment in reels or bolting cloth shakers, after which the mixture of starch and gluten is made up with water to have a density of 5 to 7 degrees Be. This mixture of starch and gluten is next run slowly out on tables or troughs. These are 120 feet long, two feet wide and are inclined about four inches below level at the delivery end. The starch is now freed from the gluten and settles out owing to its high specific gravity while the gluten-bearing liquor flows off and is further processed for

feed purposes. Purification of the crude starch is conducted by re-settling or filtering after suspending it in fresh water once or twice again. Hot air tunnels are used for drying, the temperature of which is regulated somewhat according to the form in which the product is desired.

Pearl starch, which consists of different sizes of small crystals and looks like a powder, is ordinarily dried at 160 to 180 degrees F. and requires approximately 24 hours. Crystal starch is obtained by slowly drying a large mass for several days at 130 to 160 degrees F. and as drying proceeds, shrinkage cracks occur which allow the formation of the so-called crystals. These differences are only physical and the slower the drying, the larger the crystals. Powdered corn starch is obtained by bolting the pearl product to obtain uniformly sized particles.

The granules of corn starch are readily identified with the microscope in that most of them are regular in size, .02 to .03 mm. diameter, mostly angular and generally contain a distinct star-shaped hilum. The younger granules may, however, be circular. The plane of polarized light is changed by this starch to show a well defined dark cross on each illuminated granule.

3. Potato starch: large granules oyster shaped or oval; small granules spherical; .06-.1 mm dia. Magnification, 370X . . . . . .



4. Potato starch granules as seen under polarized light. Large granules, melon like. Magnification 270X . . . . . .

On boiling, corn starch produces paste with a maximum viscosity in about thirty minutes. On prolonged boiling, however, the viscosity diminishes. Most authorities agree that this starch produces a harsh feel although it has good binding and adhesive properties. It will bind approximately 1¾ times its weight of mineral fillers and is widely used in backfilling because of this, as well as by reason of its relatively low price. It not only gives a harsh and papery feel, but has little flexibility, being quite brittle and subject to cracking in handling the finished goods. The film formed is somewhat opaque in comparison to that from most other starches which accordingly detracts from the lustre.

Potato Starch

Potato starch is obtained ordinarily from selected mature potatoes. These are given a preliminary cleaning to free them from adhering soil by mechanical agitation and water washing in long troughs. They are then thoroughly cleaned in special washing machines or rotary drums, following which the potatoes are fed to a pulping machine with about twice their weight of water. Since the object of pulping is to liberate the starch by breaking down the cells of the potato, it is, therefore, desirable to break these cells as completely as possible for the best yield. Many types of such machines are used for this, most of which consist of rotating sawblades. Rasp types have been used, but generally give inferior results with higher cost for upkeep. Oscillating as well as rotary type sieves are used for separating the starch from the pulp. This is fed into the sieves while water is sprayed on. The crude starch passes through as a milky liquid while the spent pulp is retreated for its residual starch content. The water containing the crude starch is allowed to settle and collects with small amounts of cork from the skin, proteins and some unbroken cells while the supernatant liquor is brown in color. Various methods of purification are used, comprising either resettling, flushing in troughs as with corn starch or by centrifuging, the latter furnishing a superior separation from the impurities.

The starch is then dried on trays in hot air tunnels, compartment or vacuum driers to about 20 per cent moisture content. In American practice, wooden frames were formerly used which were a prolific source of splinters in the finished product, a condition which created an unfavorable comparison with foreign products. This has since been remedied, although the memory of it still lingers in the minds of many finishers when the domestic product is mentioned in comparison to the German or Dutch starch.

Starch is somewhat sensitive, during manufacture, to fluctuations in the alkalinity of the water employed, time and temperature of drying as well as to bleaching. Different lots of potato starch may vary slightly in viscosity, while the European product, which is commonly bleached, has a somewhat lower viscosity in general than the domestic, which ordinarily is not bleached. The degree of bleaching determines to a great extent the amount of this decrease in viscosity. The lower color of the domestic product, however, as compared to the foreign material is so slight as to exist almost entirely in the imagination, insofar as practical finishing is concerned.

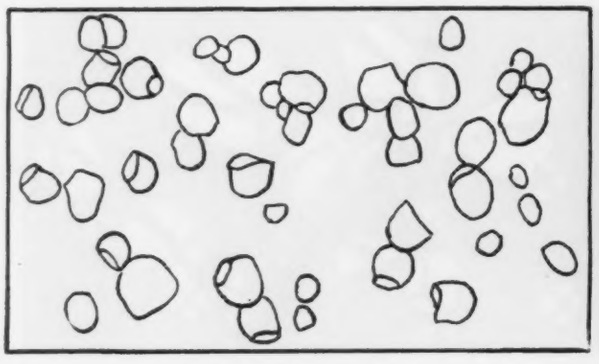
Potato starch is a glistening white, semi-trans-

lucent powder, which gives a crunching sound when squeezed in the hand. Under the microscope, the larger granules have a characteristic oyster shell appearance with concentric rings found about a hilum at the broad end. Smaller, nearly round, granules are also present and the size varies from .06 to .1 mm. diameter. This starch also shows well defined crosses with polarized light.

Potato starch boils to a thick translucent paste, the film from which gives bright lustrous finishes. This starch may give a full mellow hand or a thin, papery one, depending on length of boiling time as well as on the moisture content of the cloth. Generally speaking, however, this starch is used to produce full and mellow finishes. The boiling time must be watched closely if duplication of finishes is expected because of the rapidly changing viscosity.

Tapioca Flour

Tapioca flour is manufactured from the root of the tropical cassava plant which is extensively cultivated, mainly in the Dutch East Indies, the West Indies and in South America. The root grows to considerable length and contains approximately 25 per cent starch and in some varieties, appreciable quantities of a poisonous cyanide glucoside, that is removed by fermentation and heating the rasped roots. In many localities, primitive methods of starch separation are employed, although the better grades are produced along modern lines similar to the methods for obtaining potato starch. The grated pulp is washed in a conical washer with an upward flow of water that carries the starch through a screen near the top. This starch-carrying water is run into settling cones after which it is purified further by treatment with alkali, washed and dried.



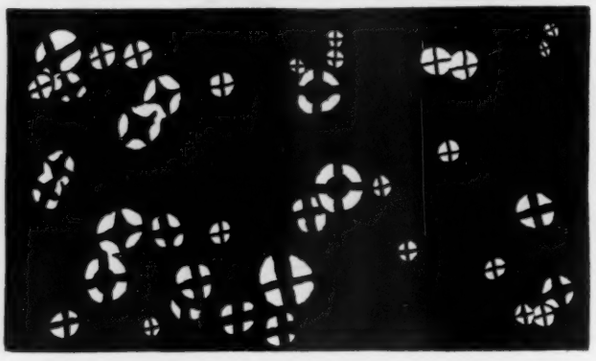
5. Tapioca starch: circular granules, some flat on one end; .015-.128 mm dia.; hilum very pronounced, concentric rings visible. Magnification, 370X . .

The microscope shows this product to be small regular round granules, .014 to .028 mm. in diameter, with some showing a flattened end. The hilum is circular, a slit, or star-shaped, while concentric rings may also be visible.

Tapioca gives a thin adhesive paste on boiling with water that has a characteristic rubbery and stringy consistency. It loses viscosity on boiling, moreover, similar to potato, though not to such an extent. The poorer grades are prone to mildew owing to the presence of nitrogenous bodies. This starch penetrates well and gives a flexible, tough finish, with a full hand. It is fairly bright and transparent although somewhat inferior to potato in that respect. Many of the dextrin gums are made from tapioca, while the material itself is one of the cheaper starches especially in the lower grades.

Wheat Starch

Wheat starch is obtained from the kernel of grain either by fermentation or mechanical separation. The former method employed this action to destroy and solubilize the gluten, without materially affecting the starch. The latter is the more modern and permits of economical recovery of the bran and glutinous by-products for feed. In this process, the grain is separated from the hulls and then steeped in warm water at 86 degrees F. for a short time until the kernels are soft enough to burst easily between the fingers with a little pressure. The swollen grain is then crushed between fluted rolls to burst the cells, and passed to the starch extractor. This is essentially a kneading machine in which the gluten is kneaded to a thick viscous mass, while the crude starch is flushed out by a water spray through sieves. Purification takes place by running the liquor through settling tables where the heavier starch remains while the lighter starch and gluten runs off. The settled starch is re-settled or filtered for first quality material while the run-off is usually settled and sold as a second quality product after rapid drying to prevent fermentation.



6. Tapioca starch granules as seen under polarized light. Magnification, 370X . . . . . .

The drying of wheat starch is usually conducted at relatively low temperatures. Dried on trays in either tunnel or compartment driers, the starch is usually in crystal form. This form usually contains 1½ per cent to 3 per cent of gluten or small amounts of dextrine as binder, while starch intended for powder is usually treated with water containing a little ammonia in the final wash to remove the last residues of gluten.

Wheat starch appears as both large and small round granules, each size uniform, the smaller ranging from .002 to .006 mm. while the larger ones have diameters of .045 to .052 mm. Neither a hilum nor rings are ordinarily visible, while with polarized light this starch shows a faint cross.

The lower viscosity of wheat starch solutions per-

mit its penetration of the cloth to give a thick, full, and mellow hand. It is the most adhesive of the starches and will carry about twice its weight without dusting of clay and other fillers, but unfortunately, its price prohibits its use in the cheaper finishes.

Sago Starch

Sago starch is manufactured from the pith of the palm fern chiefly, *Cycas Circinalis*, growing in the Malay Archipelago. The maximum starch content occurs just before the plant blossoms and so the shoots are cut at this time, when they have attained a diameter of two feet or so. The starch is separated by kneading and washing in troughs, when the settled starch is gently heated to partially dry the mass, following which it is granulated. These granules are then air-dried and have a glassy surface. This starch is tan colored, although a white product can be obtained from Japan. The granules are oval and truncated, or as one authority describes them, urn-shaped, when viewed in the microscope. The hilum is visible at the rounded end as well as concentric rings, while polarized light not only shows a cross, but may also illuminate the granules with color.

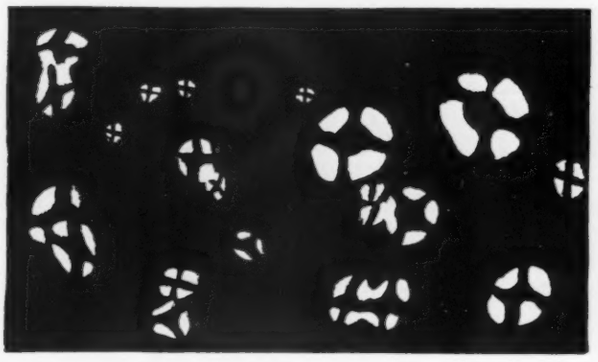
7. Wheat starch: circular granules, irregular in size; .0022-.052 mm dia. No hilum, concentric rings very faint. Magnification, 370X . . . . .

Sago is tan colored, though some reaches the market as a white, bleached product and is superior to the raw material, not only in color but also in flexibility. While the raw starch is liable to crack on the folds in thick finishes, the bleached product is more flexible and not so susceptible to this defect. This starch has a full leathery feel that is exceptionally well suited to heavy finishes. Sago also has very good binding powers for fillers and is being offered in competition to corn, the idea being that its superior binding power would permit the use of more filler with a corresponding decrease in the amount of starch.

Rice Starch

Rice starch is obtained from rice kernels which are first softened in dilute caustic solution, after which the grains are ground in double or triple step mills. The pulp obtained is then fed into revolving screen drums with water which separates the starch liquor from the coarse fiber. The starch is now purified by repeated settling or centrifuging, after which it is moulded into blocks. Drying takes place in two steps, the first being a slow treatment at 140 degrees F. for 30 to 40 hours on porous plates. Crystal starch is obtained by continued slow drying of the pre-dried material, after placing it in a container, while the lump starch is manufactured by drying smaller lumps of the pre-dried starch which dries in a solid chunk. These two forms are the usual commercial varieties offered, and are commonly tinted with small amounts of ultramarine blue to disguise the yellow tint which is shown by even the most carefully purified material. The rice granules are very small and uniform, having a diameter of only .005 to .0076 mm. The microscope shows them to be angular, generally with five or six sides, while they appear as brilliant spots of light with polarized light. A cross may be seen with high magnification.

This starch with heavy mineral filling gives an opaque, dead white color. The hand is full, harsh and boardy. In other mixes, it gives a high gloss but its price prevents its general use. It is also the thinnest boiling of the raw starches, and shows practically no change in viscosity after a half hour.



8. Wheat starch granules as seen under polarized light. Weak Maltese cross. Magnification, 370X.

Thin Boiling and Soluble Starches

The various brands of thin boiling and soluble starch are intermediate products between the raw material and dextrine. The thin-boiling product is so controlled in manufacture that the granulose is only partially modified with little or no action on the starch cellulose. Microscopic examination, moreover, shows practically no change in the appearance of the granules, while the test with iodine also gives a blue color. Soluble starch, however, dissolves in cold water to give a thick, colloidal solution, and the granules have been ruptured in manufacture. Since widely different methods of manufacture may be employed, as well as different degrees of conversion with each method, starches of quite different solubilities and viscosities may be obtained. The solutions of these starches boil considerably thinner than the corresponding starch from which they are prepared and are classified technically in nine grades. This classification is in terms of fluidity with values from 10 to 90 in steps of ten and represents an inverse function of the viscosity, the starch

with the lower viscosity having the higher fluidity. These products are offered as thin-boiling starches and gums. The various brands are associated with their manufacturer by trade names, while soluble potato has long been known as Swiss gum.

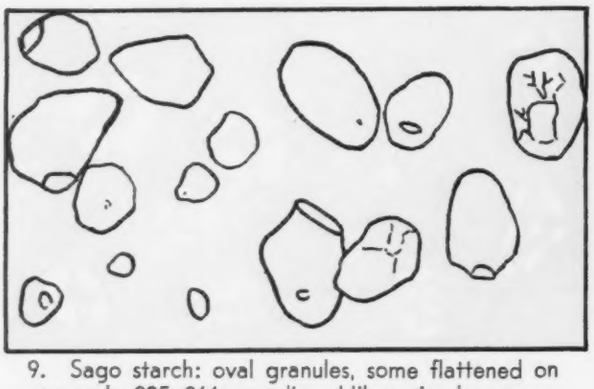
The thin-boiling starches are used because of their penetration to give body and weight. Their use permits the finisher to get considerable starch into the mix without increasing the viscosity beyond a working limit, especially in heavy mixes. Their binding power is inferior to the raw starches for mineral fillers, and consequently cannot be used alone with these in heavy mixes without danger of excessive dusting. Thick, tough and leathery hand is obtained with combinations of the raw and modified starch. Corn starch can be modified and dried in crystal form to imitate wheat successfully. The soluble starches dissolve in water to give thick, colloidal solutions and give crisp transparent finishes. The caustic solubilized tapioca is used, for example, to finish organdies.

Dextrines

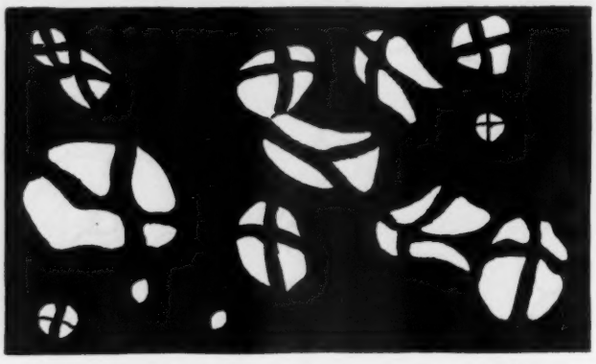
Dextrines are more highly converted products than the thin boiling products. They may vary in color from nearly white to brown, the latter being the more soluble generally, with a fairly high sugar content. Envelope dextrine is dark brown for instance, and dissolves with an equal weight of water. While starch can be converted to dextrine by boiling in dilute acids, this preparation has not attained primary commercial importance. It is, however, prepared commercially by roasting the dried starch containing traces of either hydrochloric or nitric acids as catalysts at slightly elevated temperatures. With low temperature and short roasting, two hours or so, white dextrines are obtained, and with higher temperatures and longer roasting, the yellow and darker dextrines are made. British gum is obtained by heating starch without acid for approximately 15 hours at temperatures approaching 500 degrees F. and is a light brown color.

Dextrines react with iodine to give violet to red-brown colors, although this may be masked by the blue obtained with raw starch when testing white dextrines. These white products contain some unconverted starch with only traces of glucose, while the more highly converted dextrines contain increased amounts of glucose and no starch. Solutions of dextrines give thin adhesive solutions which do not jell on cooling. It is very adhesive and gives heavy, full finishes without much stiffness. It is commonly used in khaki uniform cloth in place of starch. Objectionable white lines may develop from cracks at the folds on dyed goods with heavy starch finishes, which is not the case when dextrine or British gum is used.

Gum arabic, tragacanth and various seed gums have a limited use in finishing although used extensively as thickening agents in printing. These are natural gums composed of complex carbohydrates and contain small amounts of magnesium and calcium. Gum arabic reaches the market as irregular lumps which are generally spherical or nearly so, rough and somewhat opaque on the outside. These are rather brittle and are easily powdered, giving a shining surface when fractured. The color varies from colorless to pale brown, the better grades of which are the former and are free of sand and other insoluble particles. It is obtained by the hand picking of a dried extrusion from various species of Acacia growing in Northern Africa, Turkey, and some parts of India. Thick, viscous solutions can be obtained by dissolving in either hot or cold water which has been used extensively in silk finishing. It has, accordingly, been adopted by the rayon finishers as a body builder in transparent finishes. Objectionable stiffening can be easily broken down by calendering. Its cost is generally prohibitive for cotton finishing.



9. Sago starch: oval granules, some flattened on one end; .025-.066 mm dia. Hilum circular, sometimes with slit; concentric rings faint. Magnification, 370X . . . . . .

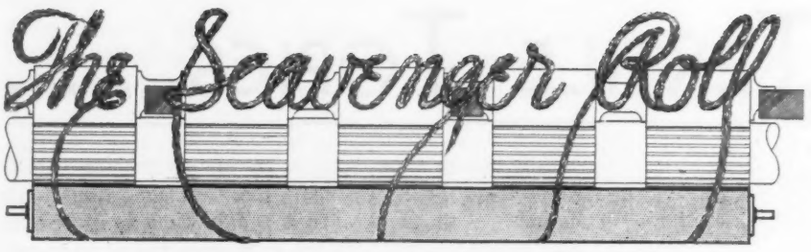


10. Sago starch granules as seen under polarized light. Magnification, 370X . . . . . .

The better grades of tragacanth reach the market in characteristic thin, semi-circular, shell-like, crinkled flakes, which are white or only light colored, and free of solid impurities. The lower grades are darker, contain solid particles, while the flakes may be thicker and broken. Vermicelli forms may also be obtained by puncturing the bark in contrast to cutting which yields the flakes. It is obtained from shrubs growing along the Mediterranean, from Greece through Asia Minor to Persia. This gum does not dissolve in water, but swells to give a thick paste and is commonly sold as such in 8 per cent to

(Continued on page 89.)

The Scavenger Roll



"No one sees what is before his feet; we all gaze at the stars."—Cicero.

This new department makes its second appearance this month, taking the above quotation as a text. Its purpose is to glean ideas from this mill and that mill, and deposit them here for you and others in pithy paragraphs. Its endurance depends upon its "fan mail". If you haven't done so, tell the Editor whether you like it. This department will welcome suggested topics and paragraphs from readers . . . . . .

Semi-Combed Yarn

A superintendent volunteers information relative to that comparatively little-known product—semi-combed yarn. Mills on regular combed yarns remove from 10 per cent to 18 per cent (in special cases as high as 22 per cent) waste at the combers. In semi-combing only 2 per cent to 3 per cent comber noils is taken out. But the process, as this superintendent has it worked out, doesn't stop there. At the drawing frames carded and combed slivers are run together. This man advises that by combining the carded and combed slivers in this way stronger yarn is produced than can be made with all-carded or all-combed fiber of given stock. This blending process is said to be patented.

Loosening Up

As long as the sense of humor survives so shall the nation. From the recent depression came many wise-cracks and bits of ironic humor. A choice morsel was expressed by a venerable mill man: "You know, I'm spending money right now I saved during the Cleveland panic".

Rubber-Covered Top Rolls

One mill is experimenting with rubber-covered top rolls on the spinning frame. These rolls are run on all three lines and after six months are still smooth and giving good service. A recent improvement in this roll has been to make the foundation of an oil-resisting rubber compound, the covering or working part being fashioned with a view to smoothness and resiliency. It is said the rolls can be buffed when necessary.

What, No Flutes on Rolls?

Now and then THE SCAVENGER ROLL finds itself running against a front line of spinning rolls having no flutes. To save some spinners needless expenses and grief this is treated here. One mill tried the smooth steel roll not long ago and was surprised to find the top leather rolls did not give service as long as when the fluted roll was used. We think there are two answers to this: 1, there was slippage between the top and bottom rolls, this being borne out by the fact that the drafting was not as smooth as with the fluted roll, the yarn being lumpy and uneven; 2, there was no rest for any part of the leather cot each revolution as is the case with the fluted steel roll. With each revolution of the fluted roll part of the leather cot gets some rest in the "sea" between the "land", i.e., the two components of the fluted roll.

The fluting of the steel rolls has been worked out more scientifically than most mill men realize. The spacing of the "land" and "sea" is accurately worked out, and the proper variation of the flutes in the circumference helps to avoid fluting of the top rolls. A certain make of spinning frame, no longer manufactured, was never able to show the evenness and strength in its yarn that other makes of frames did because of failure in getting the right pitch or slope in the flutes and in the right number of flutes per surface inch.

While on the subject, an experienced superintendent was recently approached by his overseer of spinning with the proposition that the steel rolls be turned smooth; "that so-and-so was doing it", etc. The superintendent's answer was about like this: "The first man that made a spinning frame roll made it the easiest way, which was smooth. He probably had little or no equipment for fluting the rolls and would certainly try the easiest roll to make first. Now you can bet your hat he found some disadvantages in the smooth roll that caused him to try the harder-to-make fluted roll, so that you can be sure the smooth roll was tried long ago and failed".

One on Will

Which bit of hard horse sense brings to mind an unpublished (and unverified) story about Will Rogers that came via a personal route. Rogers, according to the report, was invited out to dinner, accepted, and entertained the party royally. The next day the host received a bill for $1,000.00, whereupon that agitated party called Rogers and assured him the invitation was purely a personal one. "It is always considered professional", replied Rogers, "unless Mrs. Rogers also is invited". He got the thousand.

How's This for Running?

With an eye on the recently published table of printcloth mill spinning practices and results so ably compiled by the Editor of COTTON (and a vague memory of a large package spinning article which appeared in these pages several months ago) the interesting case is encountered of a mill recently changed from fine combed broadcloths to carded printcloths. This mill is equipped with 1-9/16-inch No. 1 flange warp rings, and changing this diameter to the 1-3/4-inch or 1-7/8-inch size usual for 30s warp isn't possible. The mill is running "government" one-inch cotton and is getting a front roll speed of 145. Experiments have been made with 1-1/32-inch cotton that enabled a speed of 155 to be run. Spinners are running twelve sides and doing their own cleaning and the yarn strength is 58.

Creeling "Solid"

A mill that has attracted our interest is one making 26s to 50s gray hosiery yarns. In this mill the roving is creeled in the spinning room "solid", i.e., a complete set of full bobbins is creeled in at one time. Everything about the frame is cleaned while stopped for creeling. To make the roving run out uniformly it was necessary to arrange a knock-off motion on the fly frames that was driven from the front roll. This assured every doff being exactly alike as to roving yardage. But this was only half the battle. Bobbins run on adjacent fly frame spindles would not run out alike in the spinning creel. A worn flyer pin, a bobbin barrel off size, worn flyer leg, etc., etc., would stretch the roving more or less, and the problem of making all the roving run out alike caused a deep inquest into fly frame imperfections. Every roving bobbin had to be turned down 1/32-inch, every defect about the fly frames had to be eliminated to avoid excessive roving waste. The superintendent said it took six months steady plugging to get the job right. He didn't want to go into it but the management insisted and now he says if he were allowed to change back to the broken creel system he wouldn't. What the management was after was the near-gouts or slubs caused by setting in roving. Particularly with unweighted middle rolls are these hard to avoid. To the superintendent's surprise his production on the spinning frames increased, and the additional sides the spinners could run offset the expense of the creeler hands. On the winders the difference was particularly noticeable. Whereas formerly the winders had to be run extra time to keep up with the spinning, now, because of the fewer slubs and consequent breaks, they are turning off a larger production in fewer hours. The solid creeling idea has been carried all the way through the card room in this mill.

One superintendent comments on this by saying that most of the stretching in roving takes place on the first one-third of the bobbin while being made on the roving frame, and that if solid creeling is done all this stretched roving is spun together, and that for this reason it is best to have broken creels. This is a subject which should be thrashed out thoroughly in the "How OTHER MEN MANAGE" department.

CURRENT TEXTILE TOPICS. . . .

Talk of the Month

The General Situation in Textile Markets

AFFAIRS outside the industry have divided the attention of cotton manufacturers since the inauguration of the new wage and operating schedules, although internal matters have given them plenty to think about. For a month and more, the country, nay the world, has been watching an attempt to create a complete new order of things economically. The program is certainly one of ideals; whether the NRA can be made practical on such a broad gauge as to include all economic groups from the producer to the consumer is the test which has been undertaken.

Some groups lend themselves readily to definite regulation of work; that is, to certain hours and set scales of wages. That is true of the groups which come under the category of factory producers, as demonstrated long ago. The Nira, therefore, offers from the outset a practical program and, as cotton manufacturers long ago realized, some such development was inevitable. Other groups are less susceptible to organization because of individuality of work, yet it is easy to conceive of much change in most classes of activity, even with much latitude to allow for variety of conditions.

While the NRA program may be subject to modification in many directions, there is the possibility of a great united development for spread of work and thereby the more reasonable distribution of wealth for general economic well being. In this development the great cotton industry, which was first to embark on the experimental program, stands to contribute an exceedingly important co-operative share. But by reason of its leadership in the change and also because of the record activity through the months of June and July (together with the tendency of distributors generally to wait for a sign of general progress under the NRA) the late summer weeks naturally brought a slackening of goods turnover.

Under the complications of the processing tax, moreover, the industry was forced to pause in selling for a time while figuring on adjustments in prices. The calculations involved in pricing goods under the unprecedented conditions of a 4.2 tax on cotton content were enormous, in view of the wide variety of constructions, not to mention admixture of rayon or silk. Further disturbance to turnover of fabrics was encountered by the uncertainty of values in raw cotton following upon the unexpectedly large crop forecast by the Government in August, especially after allowance for the elimination of so many millions of acres under the Government leasing plan.

Monthly reports may be very disturbing temporarily, without real fundamental effect upon the outlook. This August report was discounted by experienced observers on the knowledge that September is a more important month than July in the determination of the crop. It might be broached, too, that conditions have changed to the degree that a fair-sized crop on the basis of normal years is not so much a threat to values in 1933 as in the three preceding seasons of underconsumption. The first two weeks of the current season were significant of a greatly improved world consumption position by comparison with the two previous years. At any rate, selling agents after the August report was issued were still of the opinion that the era of very low prices for cotton was ended.

Up to the middle of August statistics had not been available upon which to measure the effect of the mill operations under the new restrictions. Significant of the extent of early volume of orders was the fact that many mills were not in a position to accept business from the Red Cross, which was again in the market for a wide variety of cotton goods. The early selling of goods that created an abnormal activity for the mills through the summer, however, was causing some anxiety lest the renewed buying for fall that usually starts in August or the last of July should fail to develop.

It was also a question whether the cotton industry would be handicapped by the problems of the Government in bringing other industries, let alone the various distributing organizations, into balance under the new regime. While admitting that regulation of distributing groups the same as industries is a difficult matter, we have seen over the years a great modification in hours and work of the former, as among wage earners in the factories. As stated by some of the textile observers, the new deal through providing more leisure for the multitudes will stimulate buying, though the markets the past month have been hesitant pending a demonstration of whether increase in public purchasing power has kept pace with higher prices for products.

Among the interesting problems of regulated industry is how plants may expand their equipment without running into a check, by Government officials. Another question is how much freedom will be allowed under the "voluntary" program, or on the other hand how much interference will be interjected. Immediately on adoption of the new schedules some manufacturers began planning to make up for what they lost under restrictions by expanding their mechanical facilities. That brings up a nice point for adjudication by officials concerned with controlling the industry as a whole,

Another problem, dealing with machinery, came up promptly in the wool manufacturing branch of textiles, because of the initial restrictions upon spindles and looms. Where as under the old conditions a lack of balance between output of spindles and looms could be offset by irregularity of operations, that became impossible under the new. Thus it quickly came about that the Administration found a change necessary. It will be seen that the partnership of Government and

industry has much the same fundamental problems as were faced by individual control, with the added one of reconciling divergent interests, if each industry is to be governed as a complete unit.

New England Mill Situation

NEW ENGLAND has had a taste of renewed prosperity in its cotton industry and is now hungry for an expected establishment on permanent lines of healthy conditions in such manufacture. The wave of business that swept the cotton trade in the spring brought a transformation among the mills of this northeastern section of the country, which was reflected before the National Industrial Recovery Act began to function. The temporary confusion which came in the train of readjustments under that act and the broader NRA program naturally had its effect upon business for New England cotton mills, but confidence was strong in the ultimate realization of a healthy renewal of goods business with a consequent continuation of manufacturing activity.

Manufacturing reports to the Government through June tell a graphic story of the change which emergence from the depths of depression has brought to cotton mills of the North.

On the basis of single-shift operations, meantime, the mills of New England ranged from 84.9 per cent for Massachusetts to 121.7 for Maine during the month of June. The range for the same month of last year was 26.2 per cent for Massachusetts to 36.7 for Connecticut and New Hampshire. This was the nadir of the depression, but after this year had started off somewhat better than last there came the drought of March. Then the pick-up started, with April, May and June piling up business and production in ever-quickening pace. Thus New England, approximating 100 per cent of capacity on the average in June, contributed to national activity which led to an unprecedented consumption of raw cotton.

Massachusetts, beginning the year at 53.8 per cent vs. 46.4 in January of 1932, was down to 46.7 in March against 55.9 last year. But in the three months after March the rate increased to 84.9 per cent, whereas in the same quarter of last year it fell to 26.2; hence an increase of nearly 100 per cent in operations contrasted with a decline of more than 50 per cent and gave June a record over three times that of the corresponding month last year. Rhode Island, at 86.3 per cent and Maine at 121.7 per cent, were more than four times their rate of June 1932. New Hampshire and Connecticut, the highest of the section last year, showed rates in June nearly three times those a year earlier.

In July, the latter part of which was affected by the code which went into effect on the 17th, the average decreased, but was well above the long-time figures in New England; Massachusetts showing 74.5 per cent single shift capacity, and Maine, 95 per cent. New England as a whole ran 78.1 per cent in July 1933 as compared with 51.7 per cent in January of this year.

Reports have been coming from the leading centers of manufacture to indicate the employment of many thousands of additional workers, reflecting the adoption of the new schedules in the first month of operation under the code. The adjustments were not made without some complications, here as elsewhere. The plant of the Richard Borden Manufacturing Company, at Fall River, ran into a strike because the workers claimed that the management was imposing more than a proper number of looms to a weaver. This matter was quickly settled, however. A strike also was instituted at the King Philip Mills, of the Berkshire Fine Spinning Associates, Inc., on the claim that the Nira code was being contravened.

Suspension of the six o'clock law for Massachusetts cotton mills and the expansion of operations had contributed by the middle of August to an increase in weekly payrolls of mill cities of $2,000,000 compared with those a year before. The payrolls in such cotton textile communities as Fall River and New Bedford were reported in mid-August to have doubled over those a year before. It was reported from Fall River, become a leader rather than a laggard trailer in textile manufacture, that more than 10,000 workers had been added to the payrolls of mills. That city and New Bedford were credited with the most amazing improvements of any industrial cities of the State.

Something new in the way of community support for a textile industry has been developed by Fall River in its decision to forego the 1933 taxes of the Narragansett Mills. The taxes and interest amounted to $3395.49, besides a personal property tax of $2067.01. The board was reported to have based its action on the fact that payment of the taxes would threaten the stability of the plant and perhaps cause its closing. The changed conditions which offer the most promise for many years and the employment of many workers were figured to transcend in importance the receipt of these taxes. The city already had on its hands a number of what used to be important units of cotton manufacture.

COMMENT ON THE COTTON MARKET

New Orleans, August 15th, 1933.

THE coming of timely beneficial rains to the Southwest, the recent collapse of the bull movement in the grain market, weakness in Wall Street, a falling off in the demand for cotton goods, the sharp contraction in domestic consumption of lint cotton during July as compared with the record of June, and the government cotton crop forecast, which was larger than generally expected, occasioned an important decline in the cotton market, today's level of contract values, compared with the "peak" of about one month ago, showing a decline of about $16.00 per bale for the active positions, while Middling spots, in New Orleans, shows a depreciation of 3 cents or $15.00 per bale.

Such unfavorable developments were a keen disappointment to the trade and southern cotton producers, especially to the latter, who, because of having plowed up or contracted to do so, so much of the planted acreage, were hopeful of better results. However, the South is not discouraged since there is some recompense in the indicated large yield per acre and the price being higher than last season's average price for Middling, which, based on the ten southern markets, was 6.95.

Substance of Washington's review for week ended August 15th: "In the cotton belt the week was practically normal, warmth and rather widely distributed showers, but the totals of weekly rainfall were mostly light and mod-

erate, with only limited areas receiving more than an inch. In general this made another rather favorable week for the cotton crop."

While there are reports of boll weevil increasing in the central and eastern belts and in parts of the Southwest, private advices state that the crop is deteriorating slower than usual for this time of the year, which tends to show that the crop continues to make better than normal progress for the first half of August.

CENSUS REPORT

Bales— United States— Season—	1932-33	1931-32
Consumption of lint, July	600,143	278,568
Consumption of lint, 12 months	6,135,525	4,866,016
Mill stocks, July 31st	1,351,033	1,217,886
Stocks in public storage and warehouses, July 31st	5,739,100	6,699,868
Stocks in mills, public storage and warehouses, July 31st	7,090,133	7,917,754
Active spindles during July	26,069,158	19,758,252
Active spindles during June	25,540,504	26,646,966

BRITISH BOARD OF TRADE REPORT FOR JULY

Year—	1933	1932	1931
Exports of yarn, pounds	10,000,000	10,000,000	11,000,000
Exports of cloth, pounds	155,000,000	198,000,000	177,000,000

SEASON'S INDICATED WORLD'S SUPPLY OF AMERICAN LINT COTTON

Bales—	This season	Last season
World's carry-over of American (Hester)	11,339,000	12,911,000
Indicated crop, if ginnings	12,000,000	12,710,000
Total, about	23,339,000	25,621,000

As to foreign cotton, the New York Cotton Exchange Service recently made the following estimates:

Bales— Season—	1932-33	1931-32
World's consumption	10,593,000	10,501,000
World's carry-over	3,555,000	4,184,000

GOVERNMENT COTTON CROP REPORT, AS OF AUGUST 1st

	This year	Last year	
Acreage for harvest, acres	29,704,000	35,939,000	(final)
Condition of crop	74.2	65.6	
Yield per acre, lbs.	198.4	173.3	(final)
Crop forecast, bales of 500 lbs. gross weight	12,314,000	13,002,000	(final)
Ginnings to Aug. 1st, new crop cotton	171,254	71,063	

As noted by the recent government report the crop seems to be not only large as to yield per acre, but promises to furnish large ginnings in early part of the season. However, because of the much lower prices prevailing now, there is likely to be a good demand from the Orient and perhaps from Russia, especially if there should be a revival in the demand from American mills, which is not at all unlikely to develop after the National Recovery Act is put into full operation, in which event exports, spinners' takings and world consumption may be encouraging.

The extent of the relief in the way of moisture that came to the Southwest during the last half of July, especially in Texas, and which was of so much benefit to the growing crop in that important State and in Oklahoma, can be surmised from the returns for the month of July, as regards Texas:

TOTAL AVERAGE RAINFALL IN TEXAS FOR JULY, IN INCHES

Year—	1933	1932	1931	1930	Normal
July	4.21	2.42	3.08	1.06	2.60
November to July, inclusive	20.53	26.38	22.77	20.16	22.87

Notwithstanding the large reduction in acreage from that in cultivation on July 1st, which was 40,798,000 acres, the crop promises much larger than expected one month ago, due to exceptionally favorable crop weather and less activity than usual by boll weevil, which made possible the very large indicated yield per acre. Of the acreage planted, 10,304,000 acres were or will be retired, and an allowance of 2.6 per cent, or 790,000 acres, were deducted for abandonment since July 1st. Moreover, the crop is not made yet, and even as estimated is 688,000 bales smaller than last year's production, the world's carry-over of American lint is 1,572,000 less than one year ago, and the world's carry-over of foreign cotton is estimated at 629,000 smaller than last year.

Recently State College, Miss., reported in part: "Boll weevil infestation in most parts of Mississippi have increased rapidly during the past two weeks, according to investigations of State Plant Board inspectors who examined 87 farms in 25 counties. The average infestation of the infested farms was 25 per cent, compared with 12 per cent two weeks ago. Older cotton is maturing rapidly, but some of it is putting on new fruit as a result of the recent rains."

It is unfortunate that such a serious decline occurred in grain and cotton, as higher prices for the staple and for farm products of the West would have made for a more favorable general business outlook. It is to be hoped that liquidation will soon run its course and that the trend of values will be upward again shortly in the interest and welfare of the whole country.

All things considered, the present price of cotton appears to be comparatively low, and the same applies to grain since U. S. crops of which this year are said to be the smallest for more than a generation, and since the Canadian wheat crop prospects are reported as very bullish. The change in the course of the grain market, when it does come, is apt to be sudden and perhaps important. Such a possible development may be witnessed in the cotton market also.

Already government officials are discussing and planning for control of next year's cotton acreage in the interest of higher prices and the return of prosperity, and, incidentally, to reduce further the present large surplus. Having been so successful in this respect this year, they have reason to feel encouraged as to the future because of the recent co-operation of the farmer who is being educated to his advantage along these lines.

What the Southern Mills Are Doing..

A complete installation of temperature control equipment on slashers, with engineering service, has been made at the Avondale Mills, Sylacauga, Ala. This includes temperature recording and control equipment on slasher cylinders, cooking and storage kettles, and size box and level controls on size box.

Lowell Bleachery South, Griffin, Ga., is constructing an additional bleachery unit, three stories, 100x100 feet. New Coal and Lumber Company have the contract.

Pepperell Mfg. Co., Lindale, Ga., have installed Veeder-Root pick counters on 2,200 looms.

Primrose Tapestry Co., Rome, Ga., have installed 20 additional looms and have erected a large warehouse.

Wilson Finishing Mills, Burlington, N. C., are constructing a two-story building, 107x210 feet, of brick and steel construction, which will house operations formerly conducted in part of the old Elmira Mill plant.

Rhodes-Rhyne Mfg. Co., Lincolnton, N. C., have let contract for a two-story annex, 61x83 feet, of brick and steel construction, to be used as a weave room.

Limestone and Hamrick Mills, Gaffney, S. C., have installed 32 new spinning frames and 12 speeders.

Joanna Cotton Mills, Goldville, S. C., have let contract to install 230 additional looms to balance weaving with the spinning equipment of the plant.

The machinery and equipment of the Augusta Factory, Inc., Augusta, Ga., have been sold to Textile Machinery and Supply Co., who, it is understood, will dispose of the equipment as salvage material. The plant, it is understood, will be used for the manufacture of overalls, shirts, and other similar products.

A. W. Arnall and F. W. Arnall, of Newnan, Ga., have purchased and placed in operation the Elberton Cotton Mills, Inc., Elberton, Ga.

Walton Cotton Mills, Monroe, Ga., have begun the erection of 50 new dwellings in the village.

Haynes plant of Cliffside Mills, Avondale, N. C., has completed the installation of 26 additional cards.

Chatham Mfg. Co., Elkin, N. C., are installing a power plant including a 1,000-kw. General Electric generator, and two new Babcock and Wilcox boilers. Lockwood, Greene & Co. are the engineers.

Watts Mills, Laurens, S. C., have begun installing 200 new Draper looms to replace old equipment.

MORE IMPORTANT NOW THAN EVER

● Under the new code and the new deal, a premium is put on prudent management and economical operation.

It becomes more important than ever to use such mill-proved equipment as Goodyear experience has produced in Goodyear Mechanical Rubber Goods for the textile industry.

Such highly developed Goodyear specialties for example as matched sets of Goodyear Emerald Cord V-Belts, Goodyear COMPASS (Cord) Endless Belt, and Goodyear THOR Belt (Seamless) do a better, more trouble-free, more economical job on textile drives because they are scientifically designed on a basis of practical experience with mill requirements.

All Goodyear Mechanical Rubber Goods for textile mills are specified to individual operating conditions by the G. T. M. — Goodyear Technical Man. He will call promptly on your request to Goodyear, Akron, Ohio, or Los Angeles, California, or your nearest Goodyear Mechanical Rubber Goods Distributor.

• • •

Goodyear is represented in the South by authorized Goodyear Mechanical Rubber Goods Distributors conveniently located with relation to your mills and able to supply promptly all Goodyear Mechanical Rubber Goods for the textile industry

THE GREATEST NAME IN RUBBER

GOODYEAR

TEXTILE BELTING

Pacolet Mfg. Co., Mill No. 3, Pacolet, S. C., have added 48 spinning frames.

Capitol Construction Co., Atlanta, Ga., have the contract for work on the new two-story addition to the spinning mill of the Dixie Mercerizing Company, Lupton City, near Chattanooga, Tenn.

Asheville Cotton Mills, Asheville, N. C., have installed new boiler and stoker equipment, supplied by Combustion Engineering Company.

China Grove Cotton Mills, China Grove, N. C., have let contract for an addition. R. C. Biberstein, Charlotte, N. C., is the architect.

Brookside Mills, and Cherokee Spinning Co., Knoxville, Tenn., are among those recently providing for the use of lunch carts for dispensing food and refreshments throughout the mill during working hours.

Robert Wheaton & Son are contractors for the one-story addition, 61x106 feet, being erected by the Griffin Hosiery Mills, Griffin, Ga.

Pioneer Hosiery Mills, Benson, N. C., have been chartered with a capital of $100,000 by E. F. and C. K. Mendenhall, J. A. Kinney, and Raymond and Mary McDonald.

C. O. Robinson has purchased the full-fashioned hosiery plant of Brumbach & Miller at South Temple, Pa., and is moving it to Elizabeth City, N. C., as an addition to the Avalon plant there.

Melrose Hosiery Mills, High Point, N. C., is building a one-story brick, one-room dye plant, and altering the two-story brick building on English Avenue.

Baker-Mebane Hosiery Mills, Inc., have taken over the properties of the Wyrick Hosiery Mills, Mebane, N. C., which will be operated as a division of the Baker-Camack Textile Corp., Graham, N. C.

Charles L. Amos, of High Point, N. C., has acquired from John W. Lambeth the Superior Hosiery Mills, Lexington, N. C.

Cartersville Mills, Cartersville, Ga., are constructing an addition to the finishing room, 75x100 feet. An addition to the boiler room is also under construction. Eugene W. Smith is contractor and Crawford & Slaten, of Atlanta, have contract for heating and sprinkling apparatus. McBurney Stoker and Equipment Co. will install boiler and necessary piping equipment. Robert & Co., Inc., Atlanta, Ga., are the engineers.

Proper Sizing of Rayon Warps

(Continued from page 35.)

the ability to accomplish a good drying at low temperatures. It is the best practice to work with the lowest possible temperature on the cans, as it increases the safety factor. Also, it is not necessary to cover the back drum with any form of jacket, as is commonly seen on the three-drum machines. These jackets are usually a nuisance, although there is available a heavy tape for giving a spirally wound cover on the can.

As mentioned before, this slasher frame or rather this combination of cotton and silk system does not allow of an end-and-end lease. Experiments are being made with a hook reed in place of the front expansion comb, and if this can be quickly and correctly operated then the last requirement for a straight warp will have been met. At present, if an end-and-end lease must be kept, it is necessary to make each warp on a warping mill and size it in solid sheet form minus the opening action of lease or split rods, which must later be put on the loom to open the warp.

The latest practice is to put in a magazine cone creel in back of a horizontal warper, drive the reel at 250-300 yards per minute, and turn off warps at such a rapid rate that costs can be brought into line with the straight cotton system.

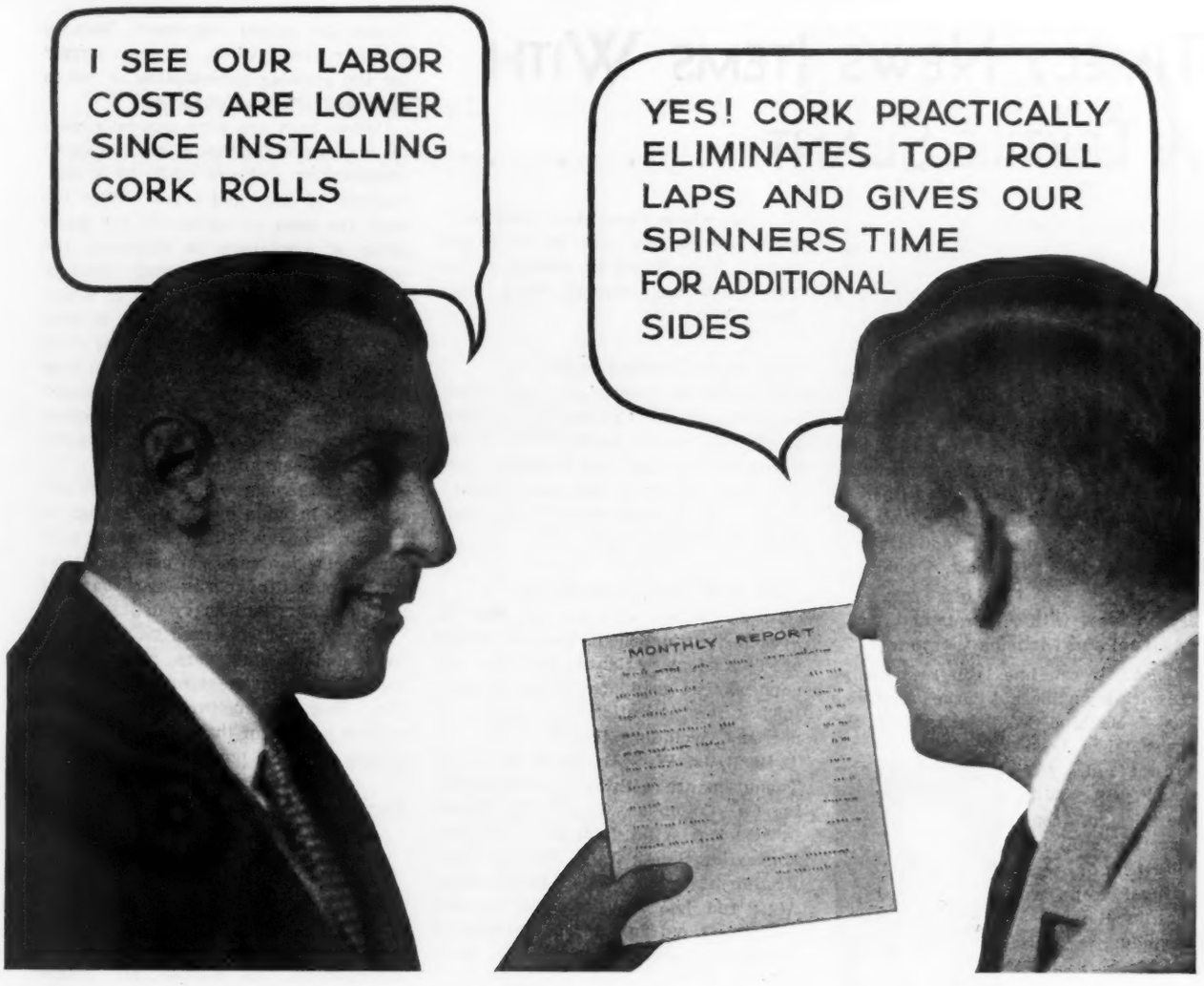
The selection of sizing compounds is one of the most important items in good sizing. It is, of course, advantageous to use a size that can be removed easily, as the finishing job can then be more easily accomplished. But, in catering to the finisher, the weaver is leaning toward trouble, as he is likely to lose sight of his own problem and fail to give the yarn its protective coating. The best manner in which to select a size compound is to run a practical test, keeping records of end breaks on the loom, amount of size put on the yarn before weaving, and, if possible, run a test on the amount of size *left in* the woven goods. Size tests should obviously be run under the same conditions. Then, examine the loom and the woven goods. See if the size knocks off on the loom. Boil out and dye a yard sample of goods, and look for warp streaks resulting from too much or too little size, and note the absence or evidence of reed marks, fuzziness, and the usual characteristics of a piece of first quality goods.

For viscose yarns, starch sizes are widely used, and, although requiring a malting in order to effect removal, seem to be popular with the finishers. For a time, glue was widely used, and makes a very good size, but high cost and difficulty of handling seem to be the principal objections.

On acetate yarns the gelatin sizes appear to be the most popular, and, in the opinions of some of the best weavers, give the best results. High grade gelatin, used in conjunction with sulphonated castor oil or gelatin as softeners, makes up nicely in solution and is not hard to apply. Gelatin solutions are usually run with the slasher threaded as the dotted line (3) in Fig. 2; using the rubber middle roll *M* bare, or, with a lighter concentration of gelatin and softener, the threading shown at (1) is used with the middle roll jacketed. This latter threading is *not* recommended, though, in preference to the threading at (3).

It is sincerely hoped that the foregoing remarks are accepted as stated in the beginning; that is, as an account of one man's practices and preferences, coupled with a few opinions and results gathered from some friends and co-workers, who also believe that a properly sized warp is the only thing to send to a weave room, regardless of the little extra trouble and cost necessary to produce it.

Nothing of any importance has ever happened in the textile business or any other business without first being born in some man's mind. That is IMAGINATION: and imagination is the greatest asset any overseer or superintendent can have if he will follow up what he can imagine and make the idea materialize.


I SEE OUR LABOR COSTS ARE LOWER SINCE INSTALLING CORK ROLLS
YES! CORK PRACTICALLY ELIMINATES TOP ROLL LAPS AND GIVES OUR SPINNERS TIME FOR ADDITIONAL SIDES
MONTHLY REPORT

HERE'S an actual instance: One mill* on 30s warp installed Armstrong's Seamless Cork Cots on long draft frames. Top roll laps were cut down and running of the work was greatly improved. As a result, it was possible to give their spinners two additional sides!

Cork rolls have a tendency to throw the fibres down when an end breaks. Moreover, cork does not "sweat" under high humidity conditions. This eliminates the danger of fibres clinging to the rolls and causing top roll laps.

That's not all you can expect from Armstrong's Seamless Cork Cots. Without exception, every mill that has installed them reports noteworthy savings in roll covering costs. Figures on this saving average 60%—in some cases even higher. Yarn quality in every case is equal or better. Clearer waste is greatly reduced; eyebrows practically eliminated.

You need not take our word for these facts. Ask any mill man who has had experience with cork—or, better yet, install a few test frames yourself. Check up the results and see just what Armstrong's Seamless Cork Cots can do under the conditions that exist in your mill. For further information, address Armstrong Cork & Insulation Company, Textile Division, 923 Arch Street, Lancaster, Pennsylvania.

**Name will be sent gladly on request.*

Armstrong's SEAMLESS CORK COTS

For Spinning and Card Room Rolls

TIMELY NEWS ITEMS WITH A TEXTILE SLANT . . . .

Sales Agency Formed

Engineering Sales Company, 601 Builders Building, Charlotte, N. C., has been formed by V. G. Brookshire and S. R. Brookshire. Among the accounts handled by this organization are those of The Gates Rubber Company, Vulco rope V-drives, cone belts, pickers, etc.; Lyon Metal Products, Inc., steel shelving, lockers, cabinets, chairs and boxes; Standard Conveyor Co., conveying equipment and machinery; Barrett-Cravens Co., lift trucks, platforms, portable elevators, etc.; and Orleans Bobbin Works, of Newport, Vermont.

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Bryson Now with American Tool and Machine Company

T. A. Bryson has been retained as consulting engineer by the American Tool & Machine Co., Boston, Mass. Mr. Bryson has been identified for many years with the design, construction and application of centrifugal separators in the process industries. The American Tool & Machine Co., long manufacturers of centrifugal machines for the sugar and other high production industries, plan, through augmenting their technical and engineering organization, to develop further their products and service for other process industries, such as chemical, textile, etc. In the modernization of its plant facilities, especial provision has been made for the maintenance of a dependable source of repair parts, in the belief that this is necessitated by the long effective life of well-built equipment.

T. A. Bryson

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New Kron Distributor

The Kron Co., Bridgeport, Conn., manufacturers of industrial automatic dial scales, have appointed Ebbert & Kirkman Co., Inc., 321 Brown-Marx Building, Birmingham, Ala., as distributor to handle their complete line of equipment.

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Calco Acquires E. C. Klipstein Co.

The Calco Chemical Company, Inc., Bound Brook, N. J., have purchased the plant and business of E. C. Klipstein & Sons Co., of South Charleston, West Virginia, whom they have represented heretofore in the sale of their dyestuffs. The Klipstein company has been producing sulphur black since 1916.

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Kelly Joins Carolina Steel

Mark Kelly, formerly a field representative of the Cyclone Fence Company, has become associated with the Carolina Steel and Iron Company, and will have charge of the fence department with headquarters at the home office in Greensboro, N. C.

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1933 Tech Graduates Placed

C. A. Jones, director of The A. French Textile School, Georgia School of Technology, Atlanta, Ga., has announced that graduates of the Class of 1933 at the institution have made connections, including the following: C. A. Beall, Jr., W. S. Barefield, and L. M. Thompson are with Bibb Manufacturing Co., Columbus, Ga.; A. D. Zellner is with Hartsville Print & Dye Works, Hartsville, S. C.; J. E. Nash is with Bradford Cotton Mills, Montgomery, Ala.; and Leo Sudderth, Jr., is with the dyeing and finishing department of Standard - Coosa - Thatcher Co., Rossville, Ga.

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Cotton Containers

Cotton bags are now being used as containers for shipment of more than 500 commodities, according to figures obtained by the New Uses Section of the Cotton-Textile Institute. Hundreds of millions of many sizes are required annually to take care of the demand.

One of the largest outlets for cotton fabric in this field is sugar bags. One company alone manufactured and sold 99,000,000 cotton sugar bags in 1932, using approximately 40,000,000 yards of sheeting for this purpose. In addition, 8,000,000 cotton liners for 100-lb. bags of other material, requiring about 9,000,000 yards of sheeting were sold by the same company.

Evidence of the bag industry's immense cotton consumption in other directions is furnished by the production of approximately 12,000,000 cotton potato sacks in 1932. Two years earlier cotton bags represented about ten per cent of the total number used for the put-up of potatoes. In 1933 it is estimated that that proportion of cotton bags will be several times increased. Packaging of commodities in popular retail sales units and consumer preference for cotton containers, because of their reuse value, account largely for the growing consumption of cotton for many new bag purposes.

Cotton bags are very generally used for mailing of samples of various small commodities and are made in a multiplicity of sizes and types. Wire top bags are used as containers for small parts of machinery in shipment, the bags with small units being wired to the sections of the machines in which the units belong. Mailing bags in sizes up to 17x10 inches made of print cloth are much in demand. Small cotton bags attached to heavy paper envelopes known as "2-in-1 bags" are another popular item for shipment of samples with an accompanying letter.

Among the scores of varieties of cotton bags in wide use are coin bags of canvas or heavy drill, draw-string bags for wholesale druggists' use, cork bags for shipment of corks, seed bags of light sheeting and heavy drill.

Thread and twine used for sewing of bags and as fasteners represent in themselves a large consumption of cotton. Bag manufacturers use several million pounds of thread and twine annually for these purposes.

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Rochester Company Formed to Take Over Textile and Other Industrial Lines of American Laundry Machinery Company

The Rochester Engineering & Centrifugal Corporation, 110 Buffalo Road, Rochester, N. Y., has been formed and incorporated to handle all textile equipment previously handled by the American Laundry Machinery Company. It will also handle equipment for the chemical industry and general industrials. The change became effective September 1st. The officers of the new company are: V. C. Krueter, president and treasurer; A. K. Dean, vice-president; Taylor Stanley, secretary; and R. C. Caine, general sales manager. Mr. Caine has been in charge of the textile business for the American Laundry Machinery Company for a number of years. This change separates the specialty business, including the textile equipment, from the American company's regular line of commercial laundry and dry cleaning equipment, and provides a self-contained organization for better serving the textile and other industrial fields.

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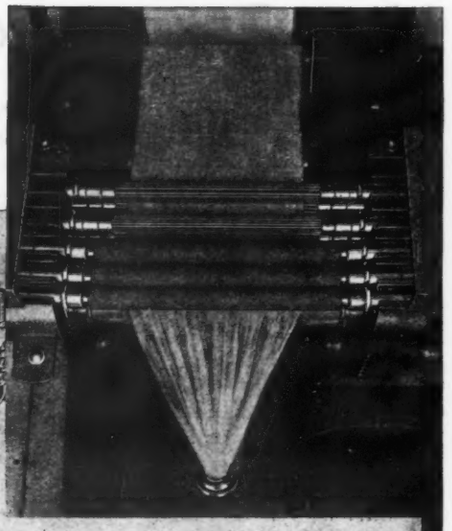
Henderson Expands

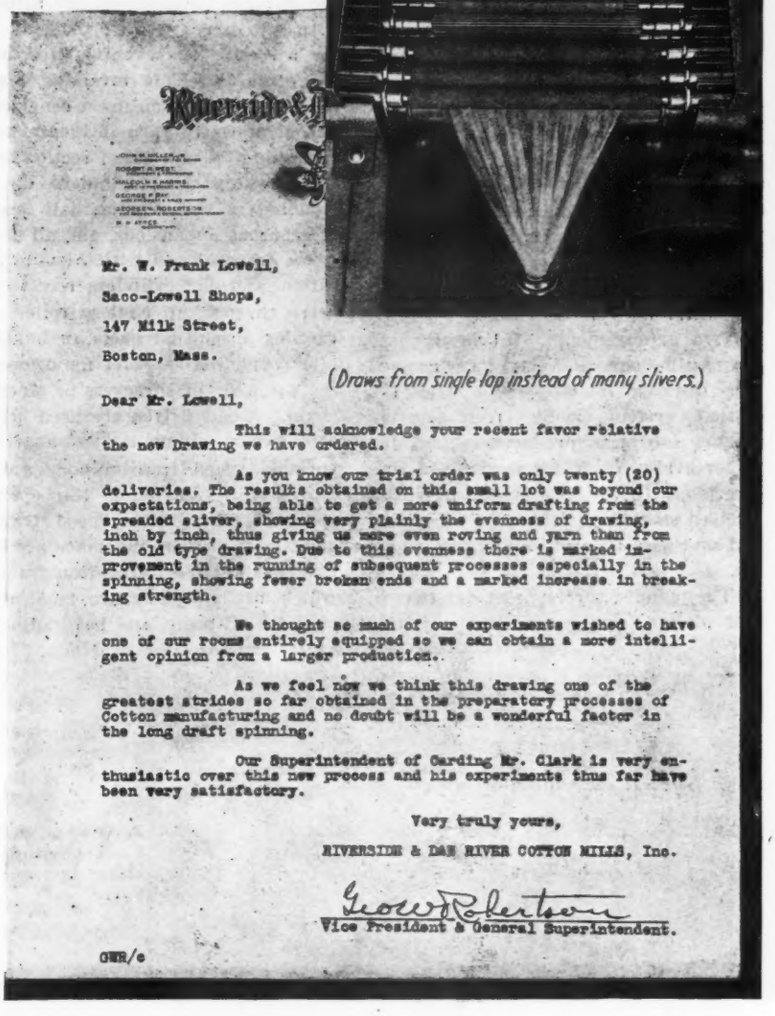
Henderson Foundry and Machine Works, Hampton, Ga., manufacturers of textile repair parts, are building an addition to the foundry, and installing additional moulding machines; they recently put in operation four additional turret lathes. This expansion is to take care of increased business.

"... fewer ends down; marked increase in breaking strength,"

says

GEO. W. ROBERTSON
Vice President & Gen. Superintendent
RIVERSIDE AND
DAN RIVER
COTTON MILLS





Mr. W. Frank Lowell,
Saco-Lowell Shops,
147 Milk Street,
Boston, Mass.

(Draws from single lap instead of many slivers.)

Dear Mr. Lowell,

This will acknowledge your recent favor relative the new Drawing we have ordered.

As you know our trial order was only twenty (20) deliveries. The results obtained on this small lot was beyond our expectations, being able to get a more uniform drafting from the spreaded sliver, showing very plainly the evenness of drawing, inch by inch, thus giving us more even roving and yarn than from the old type drawing. Due to this evenness there is marked improvement in the running of subsequent processes especially in the spinning, showing fewer broken ends and a marked increase in breaking strength.

We thought so much of our experiments wished to have one of our rooms entirely equipped so we can obtain a more intelligent opinion from a larger production.

As we feel now we think this drawing one of the greatest strides so far obtained in the preparatory processes of Cotton manufacturing and no doubt will be a wonderful factor in the long draft spinning.

Our Superintendent of Carding Mr. Clark is very enthusiastic over this new process and his experiments thus far have been very satisfactory.

Very truly yours,

RIVERSIDE & DAN RIVER COTTON MILLS, Inc.

Geo W Robertson
Vice President & General Superintendent.

GWR/c

Saco-Lowell Controlled Draft Drawing

By drawing from a lap instead of many individual slivers, this improved process produces results which represent, in the words of Mr. Robertson: "One of the greatest strides so far obtained in the preparatory processes of cotton manufacturing." The drawing sliver is much evener and stronger, resulting in far less end breakage during roving and spinning, and a marked increase in evenness and breaking strength of the finished yarn. Endorsed by mills throughout the world and rapidly becoming the new standard of drawing frame operation.

SACO-LOWELL SHOPS

147 MILK STREET, BOSTON, MASSACHUSETTS
CHARLOTTE, N. C. GREENVILLE, S. C.
ATLANTA, GA.

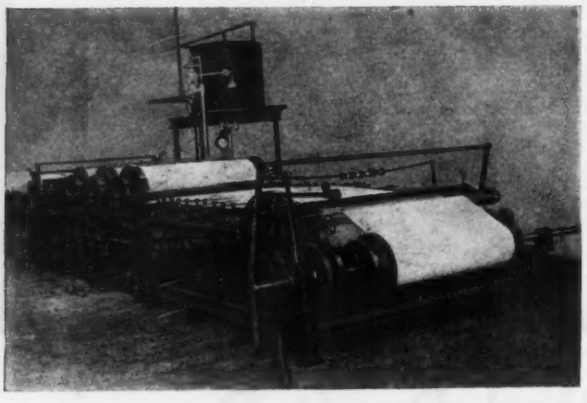
NEW TEXTILE EQUIPMENT AND PUBLICATIONS . . .

Cocker Announces Slasher for Sizing Synthetic Yarns

Cocker Machine and Foundry Company, Gastonia, N. C., well known builders of warping and warp handling equipment required in the varied processes of making, dyeing, bleaching, beaming and sizing of warps, have recently announced and put into successful operation a slasher for warp preparation of synthetic yarns, which is of special interest to manufacturers of the synthetic yarn fabrics.

Two arrangements of this machine are built—one arrangement designed for working in connection with the cotton system, sizing from section beams for mass production; and the other arrangement for working in connection with the silk system of sizing from a single beam made on a horizontal or Swiss type of silk system warper.

The manufacturers point out that in the design and construction of this slasher, every effort was made to produce a machine combining the requisites of economical operation, correct design and construction to guard against making waste and loss of time due to shut-downs for making repairs, and excessive consumption of power—and to produce a unit for securing results in the sizing of synthetic yarns to make a beam to weave well and produce a fabric to take a proper finish.



A vew of the new Cocker sizing machine for synthetic yarns . . . .

For the cotton system method, a complete machine consists of four units: a creel unit, a size box unit, a five-cylinder drying unit, and a head end unit. For the silk system method, a complete machine consists of two units, namely, the quetsch roll section unit, and the drying-beaming section unit.

The machines are complete with motor drive, or, if specified, are furnished with belt drives; with provisions made for reversing the running direction of the machine. This reversing feature, it is pointed out, means a considerable saving of waste yarn incidental to the laying in of a new set of section beams.

All rolls, drying cylinders, etc., are mounted in self-aligning ball bearings of generous dimensions, and all moving parts are equipped with Alemite lubrication. Drying cylinders receive their drive through an endless roller chain running on cut sprockets, or having an idler adjusting sprocket for compensating for wear of sprockets or stretch of chain. V-belt drives are used between the two-speed main jack-shaft and variable speed transmissions are employed for controlling the operating speeds. All variable speed transmissions used in these machines are of the ball-bearing type. Cast iron frames on which various parts are mounted are used for all units, and have adjustable feet for leveling and aligning in installation.

Means have been provided for controlling tension on yarn at all points, and the machines are equipped with clocks for indicating the amount of stretch occurring during the sizing operation, and for showing total yardage sized. The cut marker is friction driven so as to permit easy and quick re-setting.

Indicating dials are used in connection with the variable speed transmissions, for indicating the correct setting of these various transmissions for a specified denier and number of ends to be sized, and on the transmission controlling the operating speed. Also, indicating dials are used in connection with the valves for admitting steam to the different drying cylinders being operated at various temperatures and requiring different degrees of opening. Also, all cylinders and size boxes are equipped with individual traps of the thermic unit type, and steam connections to cylinders are made through rotary packless joints which work with a minimum of friction. A syphon system is used for removing condensate from the cylinders.

The size box for the cotton method machine is made of cast iron with curved bottom to permit easy cleaning, and is lined with tinned copper. The size box casting has a cored steam jacket, and is also equipped with perforated pipe for thinning the sizing solution and for boiling purposes in the cleaning of the size box. The size box immersion roller can be easily and quickly brought to and fixed in a desired operating position. The top quetsch rolls are mounted in such a manner as to be easily and quickly raised and lowered.

Section beam creels for the cotton method equipment are of approved design and construction of cast iron and steel, well braced, and have roller bearings for beam journals carried in adjustable bearing stands.

These machines are built complete with motors, expansion comb, adjustable comb stands, cut markers, clocks, and all steam equipment, including temperature control equipment for cylinders and size box if desired.

With the introduction of this slasher, the Cocker Machine and Foundry Company's line is rounded out to include complete equipment of high and slow speed warping and sizing machinery for warp preparation of synthetic yarns by the cotton system method, and sizing machinery for the silk system method of warp preparation, it is pointed out.

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New Coated Abrasives

Mill maintenance and production men will be interested in the use of coated abrasives (sandpapers) to be available in September through several manufacturers, including Armour Sand Paper Works, Behr-Manning Corp., The Carborundum Co., and Minnesota Mining and Manufacturing Co. These sandpapers, the announcement states, "will show an overall increase in efficiency that ranges from 30 to 40 per cet by speeding up work, reducing labor, doing a uniformly good job, and giving longer service."

The new electrocoating process, the announcement continues, "demands the use of a high tension electro-static field, too complicated for brief explanation. In use, however, it has the ef-

The Story of Cotton

This is the first of a series of advertisements telling the story of cotton from its earliest cultivation in India and Peru to present times.

I. INDIA AND PERU

The story of cotton begins in the pages of Ancient History. It dates back to an authentic 800 B.C. in India, and it is highly probable that the use of the fleecy commodity by the teeming millions of the Indian Peninsula even precedes that early time. Certainly India and, on the other side of the world, Peru had both developed cotton textiles which showed a remarkable perfection of technique and pattern long before either country came in contact with the white races of Europe.

Indian cotton goods were known to the Europe of the Middle Ages, and they formed a substantial portion of the roundabout trade with the East which later excited the imagination and stirred the blood of an adventurous Renaissance. It was to find a direct route to India's cotton fields that Columbus dared the Atlantic; and it was the cotton clothing and cotton yarns of the aborigines he found on San Salvador which led him to believe he had discovered a new road to the Indies and to call the inhabitants "Indians." The cotton these people spun and wove, however, was the far flung evidence of Peru's primitive but highly developed cotton industry. Peruvian cotton was the mother plant of "Sea Island" cotton, generally acknowledged to be the finest staple ever grown.

Six years after Columbus found the West Indies, Vasco da Gama, Portuguese shipmaster, sailed around the Cape of Good Hope and opened a direct trade route to India, which was soon crowded with the stately traffic of the times. "Calicut" cloth became calico; madras we still know by that name.

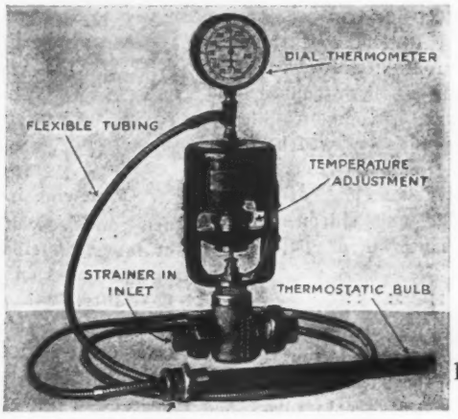
Even so, cotton cloth remained a royal raiment for many years, and only the rich possessed a purse deep enough for its purchase. Today cotton is a universal fabric; wherever people wear so much as a loin cloth cotton is sold; and the development of new uses for cotton is carrying the white staple into every department of industry, the arts and the professions.

ANDERSON, CLAYTON & CO.

HOUSTON, ATLANTA, NEW ORLEANS, BOSTON, LOS ANGELES, CHARLOTTE, LITTLE ROCK, OKLAHOMA CITY, NEW YORK, MOBILE, MEMPHIS

POWERS

Automatic Regulator



FOR SIZE BOXES COOKING and STORAGE KETTLES

•

EASY TO INSTALL

•

DEPENDABLE

Accurately INDICATES and CONTROLS Temperature

Insures UNIFORMITY of heat and eveness of size. No delicate mechanism to be thrown out of adjustment or damaged by vibration—no compressed air piping or electrical wiring.

Add to these facts the points that its control is gradual, not snap acting; that it is easy to install; and that it usually costs less than other controls and you have the principal reasons why hundreds of installations in prominent mills are giving complete satisfaction after many years.

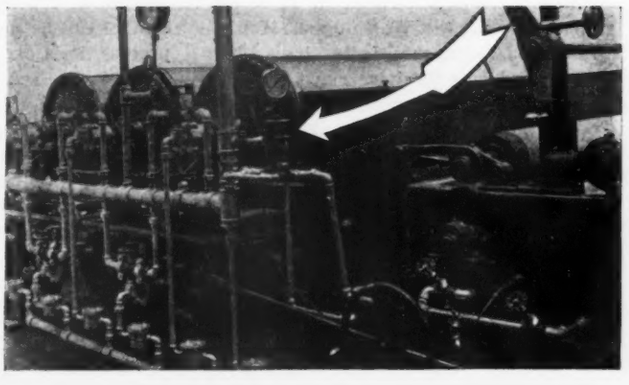
Write for Bulletin

THE POWERS REGULATOR COMPANY

40 Years of Specialization in Temperature Control

CHICAGO, 2739 Greenview Ave. NEW YORK CITY, 231 East 46th St.
ATLANTA, 306 Bona Allen Bldg. BOSTON, 125 St. Botolph St.
HIGH POINT, Box 264 PHILADELPHIA, Hardt Bldg.
BIRMINGHAM, Homewood Stat., Box 27 READING, 1121 No. 11th St.

Application to Cocker Rayon Slasher at Burlington Mills, Burlington, N. C.



fect of producing a sandpaper whose surface exposes the sharpest cutting point of each grain and in which all the particles are evenly spaced, one from the other. When it is realized that fine numbers of coated abrasives have as many as 1,000,000 of these particles adhering to each square inch of surface and that even the coarse numbers have 12,000 grains per square inch, it will be evident that the new process is a great step forward. To meet all needs of maintenance and production work, a complete line of electrocoated sandpapers will be made including grit numbers from fine to coarse, abrasive material of garnet, aluminum oxide and silicon carbide, and backing material of paper and cloth."

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Visible Lubricating System

A new, automatic, visible lubricating system for ring or ball-bearing shafts, known as the Opto-matic oiler, has been placed on the market by the Trico Fuse Mfg. Co., Milwaukee, Wis. The manufacturers claim that the new device saves considerable oil, reduces bearing troubles and eliminates oil-soaked motor windings. It is designed to provide automatically a continuous oil feed. The micrometer adjustment permits a wide range of oil levels merely by turning the glass oil reservoir. Filling the reservoir annually or semi-annually is sufficient, it is explained.

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High Speed Synchronous Motors

A new publication entitled Type G High Speed Synchronous Motors has just been issued by Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa. These motors with thermoguard protection are recommended by the manufacturers for all types of constant speed machinery such as fans, blowers, compressors, pumps, etc., and are fully described in the leaflet.

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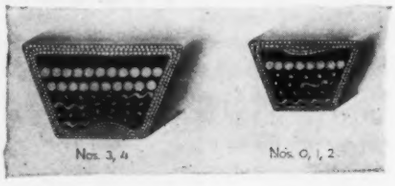
Improved Goodyear V-Belts for Worthington Multi-V-Drive

A new and improved type of Goodyear Emerald Cord V-belt has been announced by Worthington Pump & Machinery Corp., Harrison, N. J., in connection with the Worthington Multi-V-Drive. Goodyear belts have been standard on this drive since its introduction. The company states:

"High power capacity, long flexing life, uniform cross-section and low stretch are the primary factors considered in designing the new belt. A basic feature is a greater concentration, about the neutral axis of the belt, of the load-carrying capacity. The illustration shows the two variations in the new construction. Nos. O, 1 and 2 sizes have one endless cord in one plane, and Nos. 3 and 4 sizes have two endless cords in two planes. All cords are completely embedded in rubber, thus affording full insulation for the control of internal heat. The tension and compression sections of the belt



Showing interior construction

are composed of rubber, with layers of fabric distributed through the compression section to prevent excessive flexibility.

"The belt is molded to shape, and is completely enclosed in a fabric envelope which protects the working elements and provides a good contact surface for the V-grooved sheave. The fabric for the envelope is so cut that the threads run on the bias. This prevents the envelope from taking any part of the load. The envelope is 'flipped' on the belt and is so placed that the edges overlap on the top or bottom of the belt; to produce a smooth, unbroken surface on the contact faces and eliminate fraying."

:: :: ::

New Automatic Timer

A new electric timer, designed as Type TSA-10, has been announced by the General Electric Company, Schenectady, N. Y. It is pointed out that this lends itself to a multitude of automatic and remote-control applications, and that, by combinations of two or more timers, or by using one in conjunction with other types of automatic time switches, it is possible to meet a wide range of process schedules. The timer is "all electric"—timing is started by closing a switch. Resetting is automatic when the control circuit is de-energized. The timing period is readily adjustable over a wide range. When used as a process timer it can be arranged to operate a signal or terminate a process at the end of a predetermined period. By use of relays and timers together, entirely automatic control can be provided for almost any process, it is explained.

:: :: ::

Resistance Split-Phase Motors

A new leaflet entitled Type FH Resistance Split-Phase Motors has been issued by the Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa. The company recommends this type motor for such applications as fans and blowers, centrifugal pumps, grinders, etc., requiring quiet, economical drive.

Statement of Sirrine on Southern Textile Exposition

William G. Sirrine, president of the Southern Textile Exposition, recently issued the following statement:

"To children a year seems an interminable passage of time. When we are older it is just twelve ordinary months. On an industrial balance sheet it is a unit of comparison. The Southern Textile Exposition is only a little more than a year off—October 15 to 20, 1934. It will be here 'before you know it'!

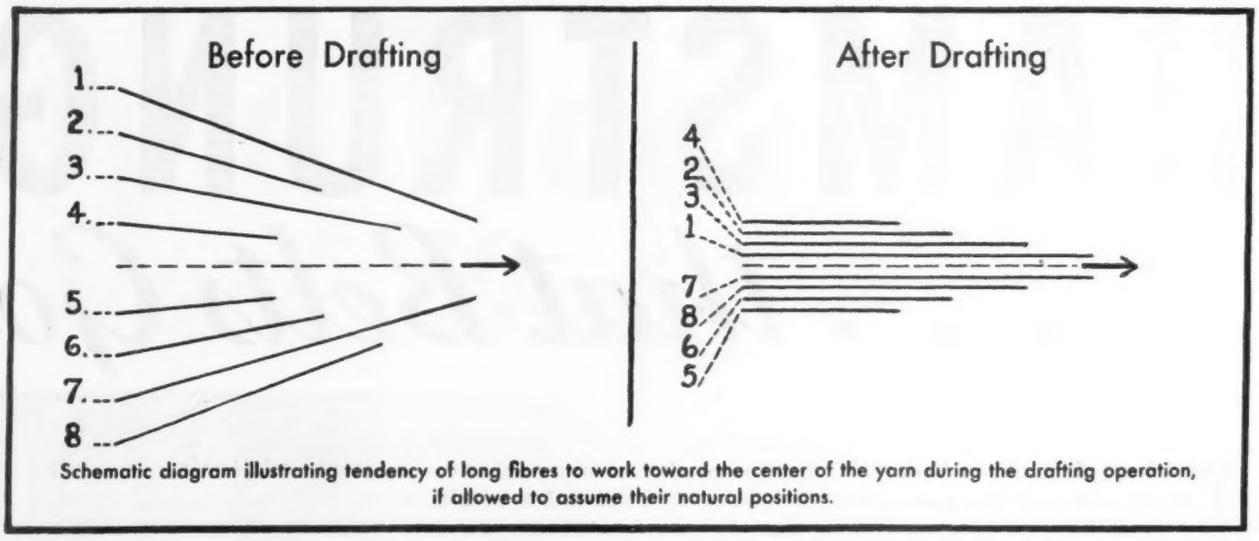
"There are few industries where changes have been as swift as in the manufacture of textiles. It is a huge business and upon its success depends many an eastern and southern community. The prosperity of millions of individuals comes directly or indirectly from the spindle and the loom.

"Despite the difficult problem facing textile manufacturers, this great industry must go on. It is like a mighty river flowing to the sea; it has its recurring times of drought and flood, its bed may be obstructed, or the pressure of its waters may cut new channels, but always it flows majestically to the ocean. Absorbing as it does innumerable tons of fiber from the cotton field, the sheep fold, the silk culture farm, and the forest, employing the creative skill and ingenuity of the engineer, inventor, machinist, and worker, the penetrating research of the chemist and the patient care and resourcefulness of the business man, and merchant—representing these and many other branches of labor, skill, and science—an industry as great as ours must not decay. It shall thrive and maintain its leadership in the world of commerce.

"We believe at two-year intervals there should be an exhibition of manufacturing machinery, accessories, operating supplies, fabricating materials, and parts. Nowadays knowledge is not only power, it is profits. By means of our shows the plant operator and his employees keep up with new machinery and methods. They can learn more in one day in Textile Hall than in a year of reading. The exhibitors send their most competent staff members to explain the methods of proper use of the things exhibited.

"A cordial invitation to attend the show next year is extended not only to the personnel of the southern textile mills, but to executives, department heads, and operatives in the northern and eastern plants.

"The people of Greenville will do all in their power to make the stay of visitors pleasant. October is the most delightful month on our calendar. The railroads are now considering special rates."



Schematic diagram illustrating tendency of long fibres to work toward the center of the yarn during the drafting operation, if allowed to assume their natural positions.

WHY H & B LONG DRAFT SPINNING MAKES A BETTER YARN

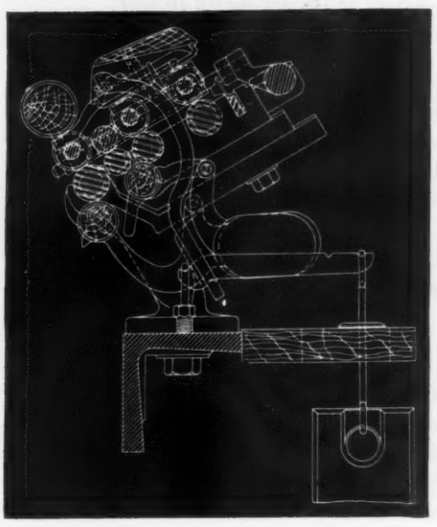
DURING the drafting operation, the longer fibres in roving, if allowed to assume their natural positions, will be pulled toward the center line of draft, while the shorter fibres will tend to move outward (see diagrams). This is essential for the making of a good yarn.

If this is permitted to happen, the natural result is a stronger and more uniform yarn. This is so because the longer fibres (forming the core) are not subjected to so much angular stress as they would be if twisted around the shorter fibres. Being relieved of this excessive angular stress, they have less tendency to break up into shorter fibres.

H & B Long Draft Spinning gives the fibres more opportunity to assume their natural positions during the drafting operation than do other systems, because it does not hamper the natural movement of the fibres with belts or other devices.

Roller No. 2 in the H & B system performs the same function as do the belts in other systems. That is, it prevents sagging and controls the shorter fibres. However it does not interfere with the natural movement of the fibres, because it makes a single point contact rather than a continuous contact. Furthermore the bite of this roll is not carried so near to the front roll as in belt systems, so that a *natural arrangement of the fibres occurs and "plucking" is prevented.*

Note that in this four-roller system, fly (and other waste) has an opportunity to fall clear. It does not bunch up and is not carried into the yarn.



The H & B Four-Roller system, being simpler, is of course cheaper to instal and to maintain than more complicated systems, also cleaner. Specify H & B and get better quality as well as lower operating costs.

H & B AMERICAN MACHINE COMPANY

Cotton Preparatory and Spinning Machinery

PAWTUCKET, R. I.

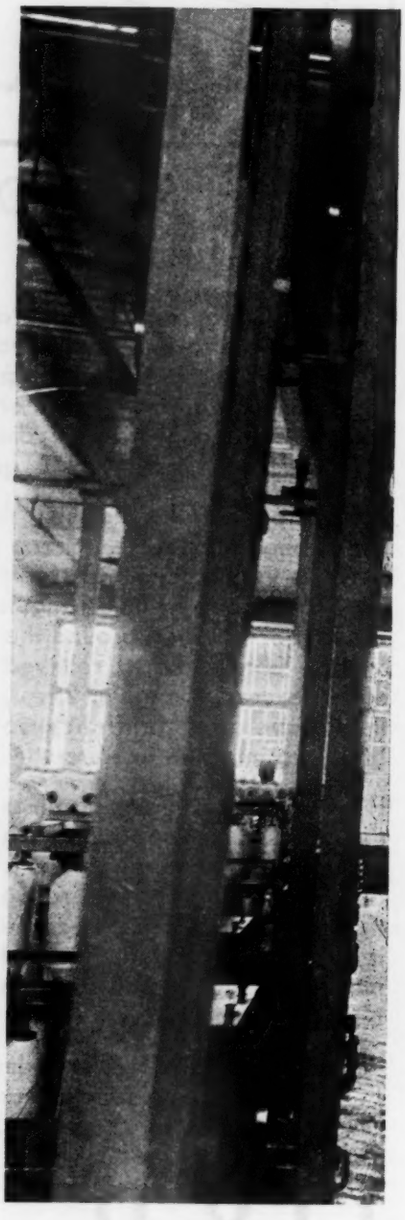
BOSTON OFFICE, 161 Devonshire Street,

ATLANTA OFFICE,

815 Citizens and Southern National Bank Bldg

H&B FOUR-ROLLER LONG DRAFT SYSTEM

HAMSTRUNG . . . *that Belts Go*



YOUR BUSINESS IS COTTON. You know what cotton yarn and fabric will do in the presence of moisture; it will absorb enough moisture to balance its content with that of the surrounding atmosphere. It will grow stronger and shrink in proportion to the relative humidity and its own characteristics of twist and weave.

On the other hand, you are familiar with the characteristics of leather. You know that it stretches under moist conditions, grows slack under tension—reacts in a manner precisely the opposite to cotton.

And yet—hamstrung by tradition—most of us have continued to put on "rubber and fabric" belting just as we did leather. If we had stopped to think for a moment, we should have known better—recognized this tendency to shrink instead of stretch in cotton mill humidities. *But we didn't stop to think!* So the "rubber and fabric" belt went on tight, and as it absorbed moisture it got tighter still; built up destructive tensions that pulled out fasteners, caused edges to fray against shifters, tore the rubber out of the surface, and the life out of the belt. Until finally all its elasticity was gone, its recoverable stretch worked out. Result—a "dead" belt shorn of its gripping power!

But the same factor that formerly ruined many a good "rubber and fabric" belt is the very one that makes it, *when properly applied,* ideal for cotton mill work. Goodrich Application Engineers found the answer. They discovered what keeps a rubber and fabric belt from shrinking on the job; they learned how to make it retain practically all of its original stretch and tenacity. So that fasteners will not pull out, because there is no excessive tension to pull them; so that the edges will not fray, because they are not tightened up like fiddle strings against the shifters. Elasticity and grip remain. The belt lives. Its tension is constant. Machine speeds are maintained. Uniform production is assured.

Goodrich Highflex Jr. is transmission belting that was custom made for cotton mills. It insures positive control of elasticity and stretch. It is made of rubber especially compounded to give maximum flexibility and long life; and of fabric that is properly balanced to meet mill conditions. It can be made endless at the factory as well as for practical use with fasteners. It can be made endless on the job with portable vulcanizing equipment. But above all, Goodrich men know

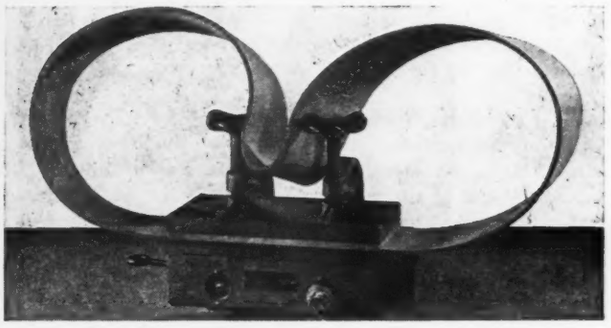
NRA MEMBER U.S. WE DO OUR PART

Goodrich

by a Tradition
Slack Under Tension

SACO-PETTEE SPINNING FRAME—3" GAUGE, SPINNING COARSE YARNS—Line shaft frame drive with large driving pulleys. Belts applied in 1928, and after five years in good condition.

how to apply it and to service it successfully. They will be glad to tell you how. No longer hamstrung by an outworn tradition of belting service, this belt is capable of earning its entire cost within a year and every year. Get in touch with the Goodrich distributor nearest you, and ask for a demonstration . . . The B. F. Goodrich Rubber Company, Mechanical Rubber Goods Division, Akron, Ohio.



PUTTING ON THE HEAT—This picture illustrates the final step in splicing a Highflex Jr. Belt in the mill. No. 5 Heintz vulcanizer is used.

GOODRICH MECHANICAL RUBBER GOODS FOR THE TEXTILE INDUSTRY INCLUDE:

- *Transmission Belting*
- *Conveyor Belting*
- *Air, Water, Suction, Steam and Fire Hose*
- *Roll Coverings*
- *Packing . . . and*
- *A Complete Line of Miscellaneous Rubber Items*

ALL *products problems* **IN RUBBER**

Highflex Jr. Belting

PERSONAL NOTES
about Men You Know

R. M. Ross has resigned as overseer of carding and spinning at the Clyde Fabrics, Inc., Mill No. 2, Newton, N. C., to become overseer of carding at the Hickory Spinning Company, Hickory, N. C.

K. D. FORSYTH has been promoted to the position of overseer of weaving at the Aliceville Division of Alabama Mills Co., at Aliceville, Ala.

HENRY ANNER, southern representative of Babbitt Brothers, manufacturers of loom crankshafts, Fairhaven, Mass., and Danielson Mfg. Co., manufacturers of loom specialties, Danielson, Conn., is receiving the congratulations of his friends on his recent marriage. Mr. Anner has moved from Burlington, N. C., to Asheville, N. C., where he will make his home and headquarters in the future.

E. C. ROBERTS, formerly sales manager of the Detroit Graphite Co., Detroit, Mich., has recently been made vice-president in charge of sales of the Arco Company, paint manufacturers, Cleveland, Ohio. Mr. Roberts is well known throughout the southern textile territory.

SIDNEY J. FILES is manager and superintendent; T. C. NATION is overseer of carding; JOE B. BRALEY is overseer of spinning and weaving; and G. C. DILLING is master mechanic at the Itasca Cotton Mfg. Co., Itasca, Texas, which recently started operations after a shut-down of 17 months.

G. C. MOSELEY, formerly overseer of cloth room at J. W. Sanders Cotton Mill, Magnolia, Miss., has become cloth room overseer at the Adams-Swirles Cotton Mills, Macon, Ga.

WOODS WILSON HUFF, son of J. H. HUFF, manager of the Rockwood (Tenn.) Mills, has become connected with the staff of southern representatives of the Quaker City Chemical Company, and is attached to the Knoxville (Tenn.) plant of the company.

F. C. RUNGE, a graduate in the cooperative textile course at the Georgia School of Technology, Atlanta, Ga., has been made superintendent of Compania Ariguanabo, Cajo de la Rosa, Hoyo Colorado, Cuba. He was formerly overseer of dyeing and finishing at this mill, which weaves chambrays and denims for the Cuban market. Recently spinning equipment was installed for manufacturing yarns for these fabrics.

PALMER DILL has been made superintendent of the plant of Brandon Corp., at Woodruff, S. C. He succeeds J. N. SMITH, who resigned recently, due to ill health, following a service of nearly 30 years with the company. Mr. Dill was formerly overseer of weaving at the company's plant at Greenville, S. C.

GARLAND EMBRY, JR., formerly with the Choccolocco Cotton Mills, Anniston, Ala., has become connected with the design department of Burlington Mills, Inc., Burlington, N. C. He was graduated in textiles at Georgia School of Technology, Atlanta, Ga., class of 1931.

ALLIE H. HOLT has become foreman of the beam dyeing department at Roanoke Mills Co., Roanoke Rapids, N. C. He was graduated this year from the textile school of N. C. State College.

DORRYS E. BENNETT has become assistant designer at the Roanoke Mills Co., Roanoke Rapids, N. C. Mr. Bennett was this year awarded the medal given by the National Association of Cotton Manufacturers to the most proficient student in the graduating class at N. C. State College.

EUGENE C. GWALTNEY, vice-president and general manager of Morgan Mills, Laurel Hill, N. C., has resigned to become associated with Bibb Manufacturing Co., Macon, Ga., in an executive capacity, the nature of which has not been announced.

WILLIAM TOLL has been made vice-president and treasurer of Sipp-Eastwood Corporation, Paterson, N. J., following the resignation of W. J. TURNER, as president. GRANT SIPP is now president, and C. P. FURMAN has been made secretary.

GEORGE B. MOORE, formerly of Arcadia, S. C., is now superintendent at the Gainesville Cotton Mills, Gainesville, Ga. V. M. MONTGOMERY, JR., remains assistant treasurer.

J. B. MEACHAM has become superintendent of the St. Pauls Cotton Mills, St. Pauls, N. C. He was formerly manager of the Atherton Mills, Charlotte, N. C.

P. M. PARROTT has become connected with Ralph E. Loper Company, Greenville, S. C. He is a graduate in this year's class at Clemson College, S. C., and was recently with Judson Mills.

J. C. CONNIFF has been transferred from the Bradford Cotton Mills, Montgomery, Ala., to the New York office of Hesslein & Co., sales agents for the mills. He is a graduate of the A. French Textile School, Georgia School of Technology, Atlanta, Ga., class of 1932. Two other members of this class, H. R. BROCK and J. C. MOORE, are now with The Trion Co., Trion, Ga., and F. F. LESTER is with the Hartsville Print and Dye Works, Hartsville, S. C.

H. A. SHEALEY has been made overseer of spinning at the Richland plant, Pacific Mills, Columbia, S. C. He was formerly second hand at the Olympia plant of the company.

R. P. HARRIS has been promoted from second hand to overseer of carding, second shift, Mills No. 1, No. 2, and No. 3, Pelzer (S. C.) Mfg. Co. Other promotions on the same shift at this place recently announced include: J. D. CRYMES, to overseer spinning; J. S. RODGERS, overseer of weaving; CLYDE DEVALL, to second hand in carding; JETTER VEHORN, to second hand in carding; and CARL DAVIS and ANSELL HUNT, to second hands in weaving.

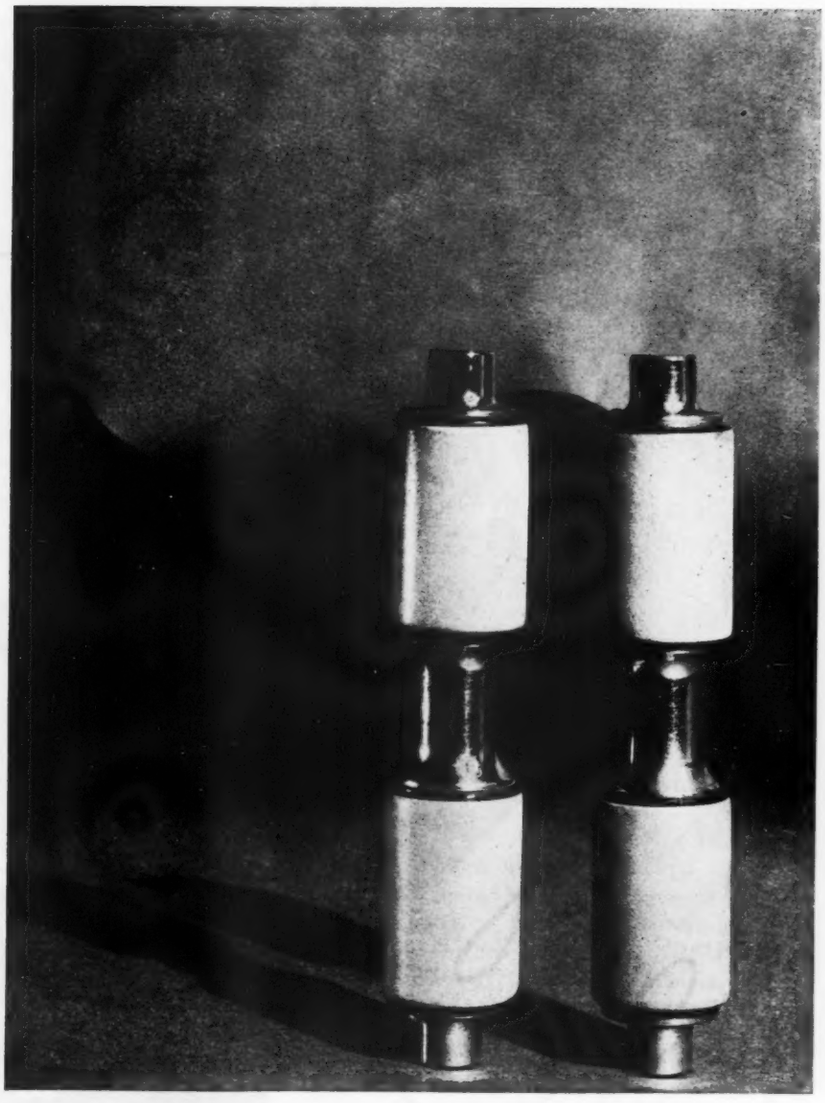
A. N. BOZEMAN has been transferred from the Dunean Mills at Greenville, S. C., to the New York office of the company. He was graduated at the Clemson textile department in 1931.

Obituary

HERBERT V. MARTIN passed away at his home in Providence, R. I., on Monday, August 7th. Over 30 years ago, Mr. Martin was overseer of spinning at the Samson Cordage Works, Shirley, Mass., and later held larger positions in mills throughout New England. He was a brother of HENRY D. MARTIN, now of Mansfield, Mass., who at one time was superintendent of the Griffin Mfg. Co., Griffin, Ga., and the Williamston Mills, Charleston, S. C.

EDGAR S. TICHENOR, president of the Walton Cotton Mills, Monroe, Ga., passed away at his home on August 3rd, following a lingering illness. Mr. Tichenor had recently been made a member of the board of directors of the Cotton Manufacturers Association of Georgia. He is survived by Mrs. Tichenor, and a son, HENRY MCD. TICHENOR, vice-president of the mill.

SPINNA CALF
is resilient



LONGER SHUTDOWNS enforced by the new schedule do no harm to rolls of SPINNA CALF. This advantage is due to its well known resilient qualities.

A. C. LAWRENCE LEATHER CO.

Specialists in Textile Leather

BOSTON, MASS. PEABODY, MASS. GREENVILLE, S. C.

SULFOGENE FAST BLACK CL

improves resistance to "tendering"

IN ADDITION to possessing the general good fastness properties of sulphur blacks, Sulfogene Fast Black CL offers better resistance to chlorine bleach, peroxide bleach, acid cross dyeing, steaming, ironing, prolonged storing and exposure to weather.

Because of these properties it is recommended for dyeing sewing threads, mercerized yarns, mercerized hosiery, cotton raw stock and piece goods. Sulfogene Fast Black CL is especially suitable for dyeing materials for export markets where prolonged storage in hot, moist climates requires dependable resistance to tendering.

This du Pont dyestuff may be applied to cotton in all stages of manufacture. It dissolves readily, penetrates, levels and exhausts well. Sulfogene Fast Black CL can be used in all types of machines generally used for sulfur colors. It is suitable for dyeing goods which are to be rubberized.

Send for sample of this superior non-tendering black today. Test it. See for yourself how it improves resistance to tendering.

DU PONT DYESTUFFS
REG. U.S. PAT. OFF.

E. I. DU PONT DE NEMOURS & CO., INC.
Organic Chemicals Department
Dyestuffs Division, Wilmington, Delaware
SALES OFFICES: Boston, Mass., Charlotte, N. C., Chicago, Ill., New York, N. Y., Philadelphia, Pa., Providence, R. I., and San Francisco, Calif. Represented in Canada by Canadian Industries, Limited, Dyestuffs Division, Beaver Hall Building, Montreal, Quebec, and 372 Bay Street, Toronto, Ontario.

AN OLD TIMER SAYS
In working with zest and giving his best,
Just for the pleasure of giving,
In the hope of helping his brother along,
"Old-Timer" finds the sunshine of living.

The Story of Old Timer's Methods of Working and Management

Part Fourteen—Continued from July Issue

THIS, the fourteenth installment, finds Old-Timer and Jim still in the slasher room, but talking some good sound common sense about other things, too. Readers interested in the thirteen previous installments which have brought them thus far from the opening room through the mill may inquire of the editorial department for copies . .

(Note: Since this series is written in conversational style, it should be borne in mind that those paragraphs in regular type represent Old-Timer's part of the conversation, and those in *italics* are Jim's part.)

Well, OLD-TIMER, *that little story about drawing in selvages that you just told me about (see July issue) was certainly a simple thing. It looks like most any man who had been in a weave room long enough to become an overseer should know these simple things, doesn't it?*

Yes, JIM, but to show you how these little things get by oftentimes, in what we consider good mills, let me give you a little illustration.

Not many moons back, I was in a good mill. (Of course, from a grammatical standpoint a mill can't be "good". The word "good" should apply to a person, but at any rate, we do class mills as "good", "bad", etc., so here goes:

The superintendent was very nice to me while going through the mill and explained many of his short cuts and good ideas about the operation of his machines, etc., and when we got out to the cloth room he was very frank to tell me that although his seconds were in very good shape, he did have more single cuts than he should.

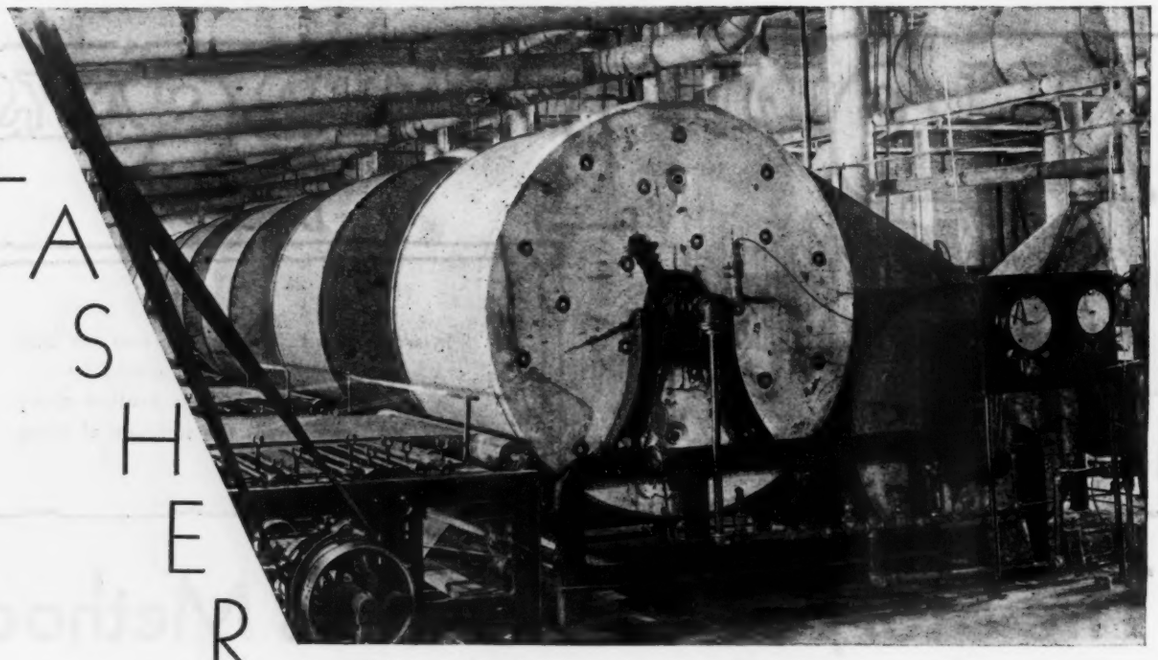
I asked him what length pieces he was taking off his looms and he replied: double cuts, and his double cuts were about 125 yards long. He was putting a cut mark about every 65 yards on his warps at the slasher.

Then I asked him how many cuts he put on his loom beams. "Darned if I know", he replied. "Suppose we go back through the slasher room and find out".

They were putting 15 cuts to beam. He saw the point before I had time to explain to him what I was driving at. Fifteen cuts caused him to have one single cut on every beam which ran out, so he at once sent for the overseer and instructed him to either put on 14 or 16 cuts, of course, preferably, 16.

It is usually the little things, JIM, which get by, and a thousand little things sometimes will decide whether a man is a good manufacturer or not, and whether the mill makes money or not. Little things are easy to forget, JIM, and there is the basic idea, the foundation upon which all this "junk" is written. We have gone into intimate detail in an attempt not only to explain, but to prove to our brother overseers and superintendents that they should have a system in all their work instead of trusting to memory or just going about their work in the ordinary way and trusting to a keen eye and close observation to catch things before they become serious.

The trouble with that method of running a job of any kind, whether it be that of an overseer or superintendent in a cotton mill or a foreman of any kind in any kind of work, is that these darn little things we have been talking about certainly will get by. Remember what I told you about my fire buckets being caught almost empty by the fire insurance inspector one time, and how I inaugurated a system so that I could never



Ideal for the New Deal

Because it increases production and reduces the amount of raw materials used, Engineered Slasher Control is ideal for present day conditions. There are new rules in the game but success still depends on *economical* manufacture and *upholding of quality*.

Correct Slasher Control results in greater production because of increased slasher speed and decreased loom stoppage. At the same time this increase is made with a great saving in size ingredients and a decrease in steam consumption. Slasher Control should pay for itself in less than six months.

Foxboro engineered control is *more* than the application of instruments. It goes into the entire slashing operation with the view of *increased production* at lower costs and of giving a controlled, uniform warp.

Talk to a Foxboro Engineer. There is no obligation—and you will probably profit from the talk. Write today.

Textile Instruments

In addition to slasher control Foxboro has a complete line of Recording and Controlling Instruments and has applied them with success to practically every textile mill operation. Send your problem to us.

Temperature Controllers
Recording Thermometers
Humidity Recorders and Controllers
Steam Flow Meters
Pressure Gauges
Time Temperature Controllers
Tachometers
Power Plant Instruments

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FOXBORO
REG. U. S. PAT. OFF.
THE COMPASS OF INDUSTRY

• • COMPLETE INDUSTRIAL INSTRUMENTATION • •

be caught that way again?

Yeah, OLD-TIMER, *I well remember that the first thing I put down on my inspection record, when you first explained the system to me, was my drawing stop motions, and I began to build up my list from that until I had all the items in my card room on that list which I knew should have attention at certain intervals. The average overseer and superintendent would say that many of the entries in that little book (I did not have a card system like you have) were foolish, that some of the items were so unimportant that it would be useless to go to the trouble to keep a record of them.*

I was looking over my old book the other night and could not help but smile when I came to some of the entries. In fact, I had one entry that I don't believe you have ever made mention of, and therefore, I do not believe you ever had such an entry in your record.

What was it, JIM?

Well, I may not have worded it just like you would, but it resulted in many good ideas just the same. It was as follows:

"Talk to second-hand".

Now wait a minute, OLD-TIMER, *and I'll explain:*

Of course every overseer talks to his second hand every day, but I did not mean that kind *of talk. You know every overseer has certain times when he gets somewhat caught up and really has no definite thing in mind to do next. Well, when those times would come or sometimes when we would get short of help or when our seconds would begin to short up and oftentimes when I had not a thing in mind as to what I was going to talk about, I would send for the second hand, close the door so we would not be interrupted and just start a conversation about something pertaining to our work.*

As the fellow says, one word would bring on another, and the first thing you knew we would be talking shop to beat the band. I don't believe we have ever had one of those meetings or conversations, or whatever you want to call them, without deciding on something *that we could go out into the room and do some good with.*

Oftentimes we would get into conversation about some supply part breaking or some weaver who had too many looms or some fixer who had a new idea about something, with the result that we would send for that fixer or weaver and maybe from all our ideas put together we would come out with something that none of us had thought of before.

Sure, JIM, very few overseers get the full benefit of their second hands, and fewer superintendents get the full benefit of their overseers' knowledge, and fewer still of the presidents and treasurers get the full co-operation of their superintendents. All because the average man wants to appear to his fellow workers like he knows it all. He thinks he is lowering himself in the estimation of his fellows if he takes the man under him into his confidence enough to get the benefit of his brains and experience.

He loses sight of one very important fact, and that is that his subordinate sees the job from a *different* viewpoint from what *he* does and can often give him information that will be valuable in forming his general policy of management.

Such inforation most always is withheld because the second hand, the overseer or the superintendent is not encouraged to open up, so to speak, to the man above him.

Say, OLD-TIMER! *I thought we were discussing slashing, and here you are cussing, or discussing, everything in general.*

Sure, JIM, and slashing, as well as carding, spinning, weaving, and all other departments need some of that cussing everything in general, as you call it, sometimes. But I guess we had better get back to our text, so to speak, so here goes: Now what were we talking about last? I've got to have something to give me a start. Ask me something, JIM, something we haven't discussed—about slashing, of course.

Let's see, OLD-TIMER, *have you had anything to say about the slasher cylinders?*

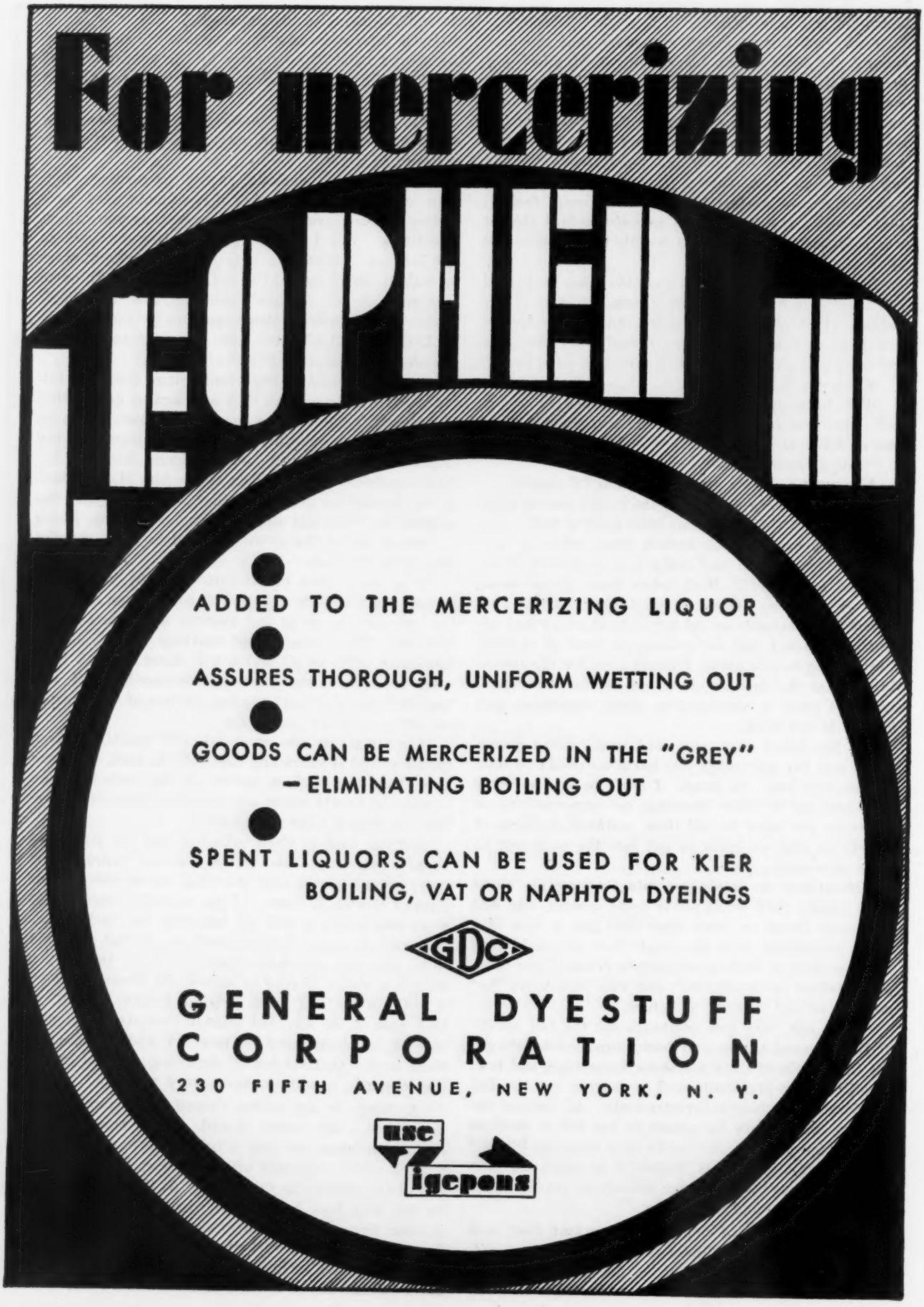
One of the main or important things about the cylinders, JIM, is to be sure they are turning easily, that is, without friction in the bearings to cause strain on the yarn. The journals which have steam packing around them to prevent steam leakage should be noticed carefully, because when steam does start to leak at the journal the average slasher man will tighten the stuffing box too tight and cause undue friction, which of course makes the cylinders hard to turn, thereby stretching the yarn.

It is very good practice to take the yarn from around the cylinders at intervals so that you can turn the cylinders by hand and thereby detect any undue friction. The journals and bearings should also be lubricated with an oil which will stand heat. I have often seen the slasher men use common loom oil, and that will run right off the hot surface of the journal as fast as you can pour it on.

Some slashers are equipped with positive driven cylinders and if yours are, look out—be sure, yes, darn sure, that the surface speeds on the cylinders and breast (or front) roller are properly adjusted to prevent stretching your warp yarn.

Getting back to those cylinders and the stretch in yarn, I only wish I had words to really impress upon every weaving mill man the vital importance of this item of stretch in yarn. If you stretch a yard of 30s warp two inches it will not take that two inches back up—well, probably I should not say it that way, but to be sure you understand me, I will say that if you stretch a cotton thread to almost the breaking point, it will not go back to its original length. It will go back part of the way, but some of that stretch is gone forever, and any good overseer of weaving can explain to you that stretch or elasticity, and *not* breaking strength, is what makes a warp run well.

A damp or wet cotton thread will stretch much more than a dry cotton thread. To be sure you follow me, suppose you take a bobbin of warp yarn and a yard stick; now pull off some yarn and hold one end at the end of the yard stick. At the 36-inch mark on the stick take hold of the yarn so it will not slip in your fingers and begin to stretch. Notice at what figures on the yard stick it will break. If that time it breaks at 38 inches, continue breaking until you get a fair average. Some will stretch more and some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will stretch less before breaking, but you will soon see about what the average is.

Now, dip or immerse the bobbin of yarn in a bucket of water and try your test for stretch again and you will realize how much effect water will have on a cotton thread.

The reason this is so important on a slasher is, that if you stretch a cotton thread ever so slightly and dry it while the tension is on the thread, you know that stretch or elasticity cannot get back in the yarn, but is gone forever, and your weaving suffers accordingly.

Make your men be careful in tightening the packing on the journals of the cylinders and make them hold the steam down. *Hold the steam down!* HOLD THE STEAM DOWN!

What's the matter? I heard you the first time.

Yeah, but JIM, I have had so much trouble in getting my men to keep the steam down and I have seen so many weave rooms that were simply in "apple-pie order" except for one or two men out in the slasher room who would not hold the steam down like they should, that I just want to shout—HOLD—

Never mind, OLD-TIMER, *about half the crowd are laughing at you now for making such a fuss over a little thing like that, and some of them have these new fangled contraptions that you see advertised in* COTTON *which holds the steam where the foreman sets it.*

Does what, JIM?

Holds the steam at a certain pressure all the time —automatic, you know.

Well, all I can say, JIM, is, that I hope every slasher in the country will soon be equipped with them. You know one of the greatest benefits weaving derives from the new high speed spooling and warping and the high speed winding and warping is that it leaves so much more elasticity in the yarn, but if you let your slashers take all that elasticity *out*, you have lost the most valuable weaving quality the yarn has.

(In the next installment, Old-Timer and Jim start to talking about one of the most helpful methods we have ever seen in connection with general mill and department management.

If you want reprints of the previous installments in this series we shall be glad to have you ask us for them.—The Editor.)

How the Textile Business Profits Under the N R A

(Continued from page 27.)

Already, under the code, violations are being aired in big headlines. They may be ignorant violations; they may be wilful; or they may be seeming violations when in fact they are not. It makes no difference insofar as public criticism is concerned because the public is often too much interested in the Act and not in the motives behind the Act.

The public along with employers and employees must realize that this new creed is as yet poorly understood, hence much charity and patience and forebearance are necessary. The public can do much constructive work in harmonizing all of the seeming discords that may arise if it will conduct itself properly.

Thus ends the story of some of the benefits that industry may derive from their application of the principles of the NRA. Theoretical, you may construe them; impossible, you may decide and yet the stern fact of the Act faces you.

Whether we like it or not, controls are here. Industry no longer has the option of self-regulation. It has lost its opportunity for self-discipline and the creation of its own sanction, but industry still has the right to take part in making its own regulations.

Some years ago, in a speech made by Mr. Hoover, he stated that government had never eagerly taken over any function that could be discharged by a community or corporation, but that it had only taken over such function when other agencies had failed. It seems at the present time that industry has become so cumbersome, so varied in its industrial philosophy, so conflicting in its ideals that self-destruction seemed imminent and it was necessary for the government, at least temporarily, to attempt to save industry from itself.

Dean Donham, in another paragraph says, that he believes it is well within the power of American business to see that control is not objectionable, but unless industry does handle itself under this new Act in the spirit of the law that that opportunity may be lost. He continues:

"If the average business man, during the last three years, thinks that he has been a free man, he is wrong, because there has never been a time in the history of this country when the individual has been so powerless as he has been during the last three years.

"The only way to get that freedom back, the only way to get an opportunity for the exercise of the individual discretion with effectiveness is by a method of control that frees you, and this is still within the bounds of possibility.

"The responsibility is heavy on the leaders of American business. Up to the present time the collapse of leadership in American business is the most disheartening fact in the depression.

"Everything ahead of us in dangerous. There isn't a power that the President has asked for that is not dangerous, but there isn't a power or a combination of powers he has asked for so dangerous as continuing to do nothing. This is not a time when inactivity is safe; it is the exact reverse. We have got to do dangerous things and the American business man must take a part in determining what those things shall be.

"The most pressing question in America today is, can American business leadership rise to its opportunities and its responsibilities?"

Look at the prices displayed at the fruit stand—the choicest and best apples bring the highest price.

Look in the show window—the best clothes bring the highest price.

The best cotton brings the highest price. The best cloth brings the highest price. Then why in thunder don't more men realize that the best men bring the highest price.

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HOW OTHER MEN MANAGE

Practical Discussions by Cotton's Readers On all Varieties of Mill Subjects

Comments On Difference Between English and American Builder Motions

A further discussion of "Wash's" question on how to change the taper without taper gears . . .

EDITOR COTTON:

There have been appearing in COTTON recently several discussions with reference to changing the taper of a roving frame bobbin without changing the taper gear on a fly frame. These discussions resulted from the list of questions submitted by "WASH (R. I.)" on page 83 of the December issue of COTTON. One answer to this question, from "CONTRIBUTOR No. 6207", on page 69 of the April issue, stated that, "The taper may be changed by changing the intermediate sun wheel gear; by putting on a larger lay gear (if possible and get good work) which calls for a large tension gear; and finally, I have seen the wraps around the presser reduced to two, and about a six-tooth larger tension gear put on".

On page 61 of the May issue, "CONTRIBUTOR No. 6195" answered the question by saying, "Change the lay gear". On page 61 of the June issue, "WASH" commented on the answer from "CONTRIBUTOR No. 6207". He said that this is not practical, that "Any practical man or a textile graduate knows, or should know, that the larger lateral movement of the rack increases the taper. If he was an experienced practical man he would have followed with an explanation of the English builder. On the English builder or latch builder, in order to change the taper without changing the taper gear, you must make a mark on the center of a bobbin, next, run the carriage so the center of the eye of the presser pad will be on the mark on the bobbin, next level the poker bar, next, if you wish to increase the taper, shorten the poker bar. Next, raise the latch screws and run the carriage and set to the length of the layer desired." Then, on page 69 of the June issue, another man answers the question by saying that he had submitted to a practical man this question and that this man stated that "On the English type of builder he would alter the length of the traverse to take care of this trouble. He did not give a definite reply on the American type of builder."

This brings into the picture that there is an English type of builder and an American type of builder, and I feel that it is appropriate to give a brief explanation of the English type of builder, because it is more complicated in its construction than the American type.

On the English style of builder, we have what is known as the poker bar slide, which is attached to the carriage, and it is taken up and down with the movements of the carriage. This slide has an adjusting point which makes it possible for it to be raised or lowered to any desired point. If this slide gets moved or out of position it will cause the bobbin to be built with more taper on one end than the other, and the only remedy for this trouble is to have the carriage run to the exact center of the empty bobbin and stop. Then poker bar slide should be raised or lowered until the poker bar is exactly level. The taper of the full bobbin can be changed at the beginning of a new doff by changing the starting point of the poker bar within the slide. In other words, the shorter the poker bar the more the traverse is shortened, which of course gives the bobbin more taper.

The American type of builder motion is more simple in construction, and naturally it has been given less thought and consideration by our readers due to this cause. Some writers have said that changing the lay gear on this make of frame would alter the taper of the bobbin, but to me this seems to be just someone's theory. It is true that a smaller lay gear calls for a larger tension gear, which in turn will move the rack further at each revolution of the tumble shaft than a smaller tension gear, but it must be borne in mind that at the same time the bobbins will be building up faster and there will be less layers of roving on the full bobbin with the large tension gear than with the smaller one, and when the bobbins are full the cone belt will be in the same position on the cone with the larger tension gear as it would be with a smaller one. Therefore, the taper of the bobbin remains the same regardless of what size of tension gear is being used.

The best way to change the taper of the roving on the American type of builder without changing the taper gear is to reverse the taper stud and gears. To do this all that is necessary is to just remove the taper gear and then pull the stud out at the top of the bearing and slip it in from the bottom side. Then put the taper gear on the top end of the stud, put on the nut, and set the gears. This gives a change of two teeth in most cases in the taper gear, and it will change the taper considerably. T. R. (N. C.)

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WE invite our readers to make use of this department for the discussion of any and all problems arising in the mill or finishing plant. Questions, answers or letters need not conform to any particular style and will be properly edited before publishing. The editors do not hold themselves responsible for any statement of opinion or fact which may appear in this department unless so endorsed. This department is open to all.

◆ ◆

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3—SCHOOL STARTS...That means wash frocks and countless other cotton wearables must be bought. And it means thrifty mothers taking advantage of value-giving promotions. Don't miss this opportunity.

4—WORK MEANS WORK CLOTHES...Thousands of men back at work in factories, mines and on public work projects need work clothes. Timely promotions of overalls, work shirts, and such things, are bound to bring swift response.

5—REMEMBER THE FARMER'S WIFE...Once again she has money to spend. Tempt her with promotions on Cottons for her house, her family and her wardrobe. It will pay you well.

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7—COTTON IS STOREWIDE. Cotton promotions are low cost promotions because so many departments in the store can participate. Put on a Fall Cotton Week—with high spot values in every department selling cotton.

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THE COTTON-TEXTILE INSTITUTE, 320 BROADWAY, NEW YORK CITY

"Wash" Asks Some More Questions.

Carders and others are cordially invited to answer these questions for "Wash" . . . . . .

EDITOR COTTON:

In the June issue of COTTON, "CONTRIBUTOR NO. 6211" states in the last paragraph of his splendid article "I should like to see 'WASH' give a very thorough series of questions, and answers, to the large and also minute details of a card room, for there is no doubt in my mind that he is just the one who can do it."

Before giving a series of questions I want to give "CONTRIBUTOR NO. 6211" a lot of credit for trying to put the textile graduate and practical man in the same boat. When you admit that a man is practical, you must credit him with knowledge and experience. On the other hand I wish to disagree with "CONTRIBUTOR NO. 6211" for I want to repeat here that COTTON is very fortunate in having a large corps of high grade contributors.

Now for the questions:

(1) In a picking machine, what harm can be done by increasing the draft without making other changes?

(2) In setting a beater, what part of the beater box should be considered so that the stock will not be taken around a second time?

(3) On a card we set the licker-in to the feed plate almost to touch. Does such a setting injure the stock, if so what about the action of the Kirschner beater on the finisher picker?

(4) Which is the best to extract the foreign matter from the field of action between the licker-in screen and licker-in: properly set mote knives with air admitted at the back of the card or poorly set mote knives with the back of the card airtight?

(5) Do you prefer a heavy lap with slow feed or a light lap with faster speed? Why?

(6) If you were going to reduce your carding, how would you do it? Would you reduce the speed of the doffer, the weight of the sliver, or the weight of the lap?

(7) When are humidifiers most helpful on cards?

(8) On drawing, which is the best draft? Why?

(9) Why is a draft less than 1.00 required between the front drawing and calender rolls on drawing frames?

(10) Are metallic rolls better than cork or leather on drawing frames?

(11) Name the causes of cut webs on drawing frames.

(12) What is the proper draft on a slubber? Why?

(13) Which is the best compound for differential motion, the Houldsworth or the new so-called differential? In answering this question please consider the additional impetus caused from the cone.

(14) We have the bobbin lead system, and so, if the bobbin leads, how can the spindle or flyer be an aid to the cone belt?

(15) Why do you find a brake to stop the bottom cone from revolving in the opposite direction at doffing time, or when the bottom cone is raised? Why does the bottom cone revolve in the opposite direction when raised on all makes of fly frames in the bobbin-lead system?

(16) What causes tight spindles on fly frames?

(17) What is the best spindle speed on the slubber, intermediate, fine and jack frames? Why?

I will try to answer the above in a later issue. Try them yourself.

WASH (R. I.)

(Note to "A. T. G.": Just as we are going to press we have an answer from "Wash" to your letter, which appeared in the August issue, page 78. We'll do our best to use it in the October issue.—The Editor.)

Causes of Button-Holes in Selvage.

EDITOR COTTON:

I note the inquiry for discussion on experience with "button-holes" in the selvage of cloth, and I am glad to give our ideas on this subject in the hope that they will be of some help to "CONTRIBUTOR NO. 6163", who asked the question, and to others who may be bothered with this trouble.

We are listing five major causes of "button-holes", realizing that infrequently other causes are encountered which are freakish and unusual. However, we think that any mill giving proper attention to the following causes will have a negligible amount of "button-hole" trouble.

I. Uneven tension on filling:
   a. Too much bristle or other tension material.
   b. Quill crooked or rough.
   c. Quill not lined up properly in shuttle.

II. Filling:
   a. Unevenness is particularly in evidence on light filling, such as in prints. A heavy place in the filling usually produces a buttonhole.
   b. Filling built on bobbin poorly. Particularly true where no bunch builders are used and doffers depress rail below bunch when building bunch.

III. Temple:
   a. Choked or corroded temple burr.
   b. Temple vibrations too short or too long.
   c. High or low temple settings.

IV. Pickers:
   a. Picker too high or too low causing shuttle to be thrown crooked.

V. Harness:
   a. Set improperly.
   b. Timed improperly.

Our experience has been that the less filling there is on the quill, the more button-holes there are in evidence. This is natural, because as the amount of filling on the quill decreases, the tension increases.

Some fabrics are much worse about button-holes than others. We have found that as fabrics tend toward light warp and heavy filling, button-holes become more troublesome. This is due to the inability of the light warp to hold against a heavy filling.

You will notice that we have not listed tender filling as a cause of button-holes. The reason we haven't included this is that we have never seen an instance of this kind.

CONTRIBUTOR NO. 6258.

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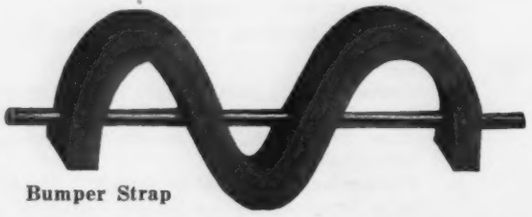

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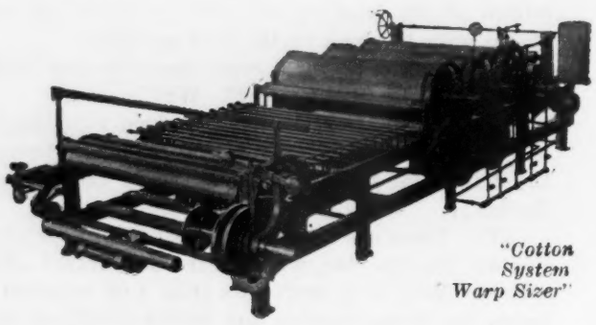

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"Weavers in the Back Alleys"

EDITOR COTTON:

I have just read the letter of "CONTRIBUTOR NO. 6234" on page 61 of the June issue of COTTON with reference to "Weavers in the Back Alleys". This man asked whether it is profitable for weavers to spend most of their time watching the back of their looms, stating that in his opinion this is true, for they will catch all of the extra ends that come up in the warp, see the small balls of lint which get on the ends at the warper, etc. He said that at his plant they are constantly teaching their weavers to spend most of their time watching the backs of their looms, with the exception of starting up the looms and inspecting the cloth about every 15 minutes, and he said that they find that the weavers who do watch the backs of their looms get a better production and have less seconds.

First of all, I should like to know, why should it be necessary for a weaver to spend most of his time in the back alley? His desired product is first quality cloth and he should be where he can see what is happening on his looms; he certainly can't see broken picks going down from the back alley, or filling skips, either. He can't start a loom up from the back alley.

Where do most of the ends break? I find most of them come between the reed and harness, and that is where most of the floats are caused, because the ends get snarled up there more than anywhere else. If a weaver is getting a lot of bad work coming up in his warps, it is time someone started looking for this bad work before it gets to the warps. Why put that up to the weaver?

Why should there be a lot of extra ends coming up? It seems to me that if this is true there is a lot of careless work going on at the warpers, and it seems as though a lot of yarn is being broken on the slashers—and these ought to be checked up. It just seems as though every department just wants to get the work through and then let the weaver fix it up.

I firmly believe that a weaver should be in the back alley for a part of the time, but just to see that no dirty work is coming up, and if there is any, report it to the overseer so that the cause may be determined.

I keep the weaver in a position to start up a loom as quickly as possible after it is stopped, saving him as many stops as possible. If he has to run from the back alley every time a loom stops, it gets very tiresome. Most of the bad work coming up can be seen from the front, if the weaver is taught to look over his harnesses as he travels up and down his alley. My policy is to keep him where his product is being produced.

CONTRIBUTOR NO. 6252.

If you realize that you have gotten up with a grouch of a morning, then let the second hand do the changing and placing of the help and you will be using good judgment.

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—When Doffers and Top Flats get out of alignment?

—When card clothing becomes oily?

—When Comb-Boxes get hot?

Put the blame right where it belongs, on wasteful, undependable liquid oil.

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Cleaning Schedules for the Spinning Room

EDITOR COTTON:

In answer to "CONTRIBUTOR No. 6201", we will compare the practice of fanning out in a spinning room on 40s and 50s combed warp with the practice of doing all cleaning by hand. We take it for granted that "CONTRIBUTOR No. 6201" desires methods and schedules which have proven to produce a quality product and at the same time a clean room—meaning floors, walls, and ceiling, as well as machines.

Three years ago we began a program of cleaning to establish schedules for different cleaning methods in our plant in all departments, and particular attention was given to the spinning room—making time studies, establishing standards on the different methods used, determining the definite amount of work, on numbers ranging from 40s to 80s combed, and noting results in the finished product.

We tried fanning off frames four times per day, stopping a frame on each side of the one being fanned, and found that some operatives were careful while this was being done and some were not, fanning in a manner that made loose lint travel to another frame running and feed in on roving or coming in contact with the end between roll and traveler, sometimes causing the end to break and again being spun in. After fanning, it was found that some large lumps or flakes of cotton remained to be picked off of the machines by hand, necessitating another inspection to pick by hand and get up broken ends before giving another frame attention.

It was found that it was impossible to get each operator to clean her frames by fanning without getting some foreign lint into the yarn. Therefore, to get this part of cleaning done, the method must be made fool-proof. We changed this, requiring cleaners to wipe rails with a rag and pick lint from weights, levers and rods by hand and use a small brush to clean guides while the frame is being doffed, doffers to use hand mop on heads and rockers.

Time studies on the two methods disclosed the fact that there was much in favor of the latter method, there being virtually the same amount of labor expended in both methods, considering the extra work caused by damage from fanning. The loss in production on companion frames was eliminated and a more perfect yarn was produced, no ends resulting from the latter method.

The accompanying schedule is now followed and is performed by spinners, spinning cleaners, roller pickers, roving men, doffers, oilers and sweepers. It will be noted that we employ spinning cleaners and roller pickers who perform that part of cleaning which is more likely to cause the hands to get soiled, who work on a base rate of pay 35 per cent under the spinner rate, while spinners perform that part of cleaning which is not as likely to soil the hands, keeping those operators who actually handle the yarn with clean hands. Consequently, spinners are given more sides to run than formerly and costs are lower for the room.

Sweeping is scheduled with enough labor to cover all the floor space every fifteen minutes, and the floor is kept very clean on this schedule. The entire room is scoured one time per week. Paper cuspidors are provided so that operators do not spit on the floor.

This schedule has been worked out in a room where long draft spinning is used, with 1⅛-inch staple cotton, using an average draft of sixteen inches. Different type spinning and shorter cotton might vary the schedules somewhat and care should be exercised that the different types of cleaning should occur just before a condition gets undesirable. For example: in picking top clearers, after a frame has been picked, time it to determine how long it takes for an accumulation to collect, and just before it begins falling off or turning loose, they should be picked again, thus establishing a cycle for this particular item.

The items (2) and (3) under Periodical Cleanings would, of course, be eliminated in a room of common spinning.

Individual work benches are provided for section men. The tops of the work benches are scoured every

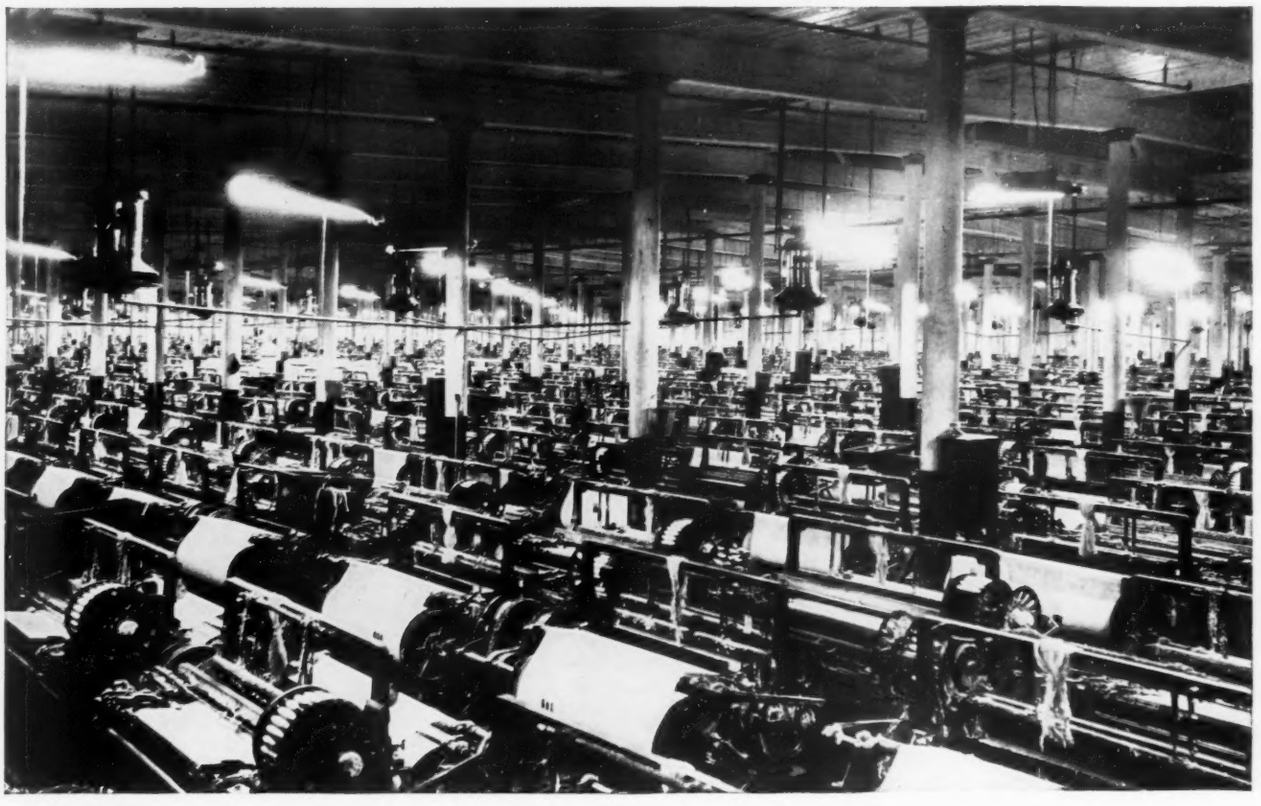
SPINNERS' CLEANING SCHEDULE OF "CONTRIBUTOR NO. 6205"

Elements	40s Warp 50s Warp
Run out front guides	10 times per shift
Pick top clearers	4 times per shift
Wipe roller bars	1 time per shift
Strip roller clearers after doff	1 time per doff
Clean guides with brush	1 time per shift
Week-end clean-up	1 time per week
CLEANING OPERATORS' CLEANING SCHEDULE	
Wipe backs	2 times per shift
Clean rails, using rag	4 times per shift
Pick steel rolls	1 time per week
Pick roll stands	2 times per week
Clean green boards and weights without fan	2 times per week
Clean base rails	1 time per week
Clean tops of skewers and tops of bobbins	1 time per week
Clean ring rails	2 times per week
Week-end clean-up	1 time per week
DOFFERS	
Clean heads and rockers—mop and gas	2 times per shift
General clean-up	1 time per week (Saturday)
Clean spindles (pick off waste)	1 time per 2 weeks
Clean motors—dry mop	2 times per shift
OILERS	
Brush down windows, walls and posts	2 times per week (Wed. and Sat., noon hour)
Brush down overhead	1 time per week (Fri. at noon hour)
Fill fire buckets	1 time per week (Fri.)
Take up and inspect white waste and carry to opener room	During work hours 1 time per shift
Blow out motors	1 time per month (Saturday afternoon)
ROVING MEN	
Wipe off tops of creels	2 times per week (Wed and Sat.)
SWEEPERS	
Sweep, grade and take out waste	Cover entire floor space every 15 min.
ROLLER PICKERS	
Pick rollers	1 time per shift
Wipe bottom and top creels	1 time per shift

PERIODICAL CLEANINGS—DAY OPERATION

1. Comb top clearers with wire brush of sufficient stiffness to free them from all lint and revive wool fibers and at the same time not produce a harmful treatment. This is done **one time per year.**
2. Use revolving lint picker to remove accumulated loose lint between steel rolls around Casablancas bands **one time per month.**
3. Clean gum and dust on Casablancas by removing staple and bridge **every six months.**
4. Remove from stands all steel rolls, wiping with gasoline and afterwards polish rolls with Spanish whiting. Dip saddles in gas to clean black oil and gum which may have accumulated, one time per year.
5. Boil ring rail in water to which has been added a good detergent, **once a year.**

Why 12 lamps grew to 700



IN 1925 a large cotton mill in South Carolina ordered a dozen mercury-vapor lamps as an experiment.

• Today over 700 Cooper Hewitt lamps produce the proper type of illumination to weave and inspect the enormous amount of cloth manufactured by this concern.

• These Cooper Hewitt lamps have played an important part in setting the high production standards of this mill. By providing proper lighting for quick and accurate loom fixing and the right quantity and quality of light at the heddles of the looms, they have speeded up production, improved quality and cut down seconds.

• The dollars and cents advantages of Cooper Hewitt lighting can be proved quickly and with little expense. You will find a test in your own mill well worth while. General Electric Vapor Lamp Co., 853 Adams St., Hoboken, N. J.

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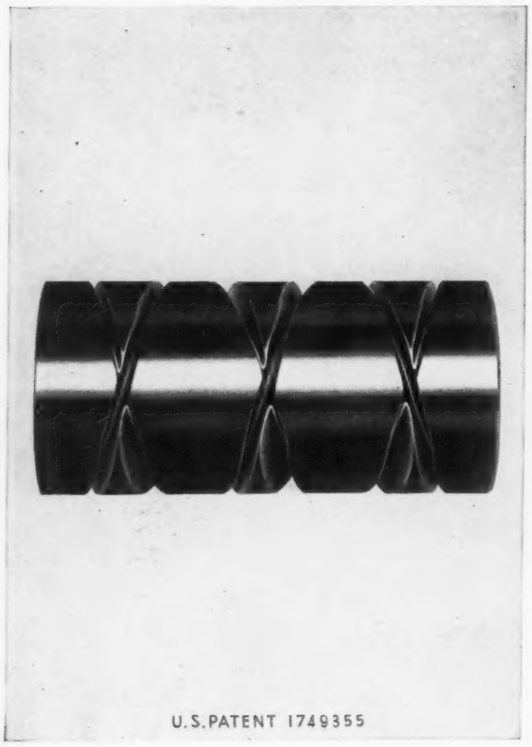

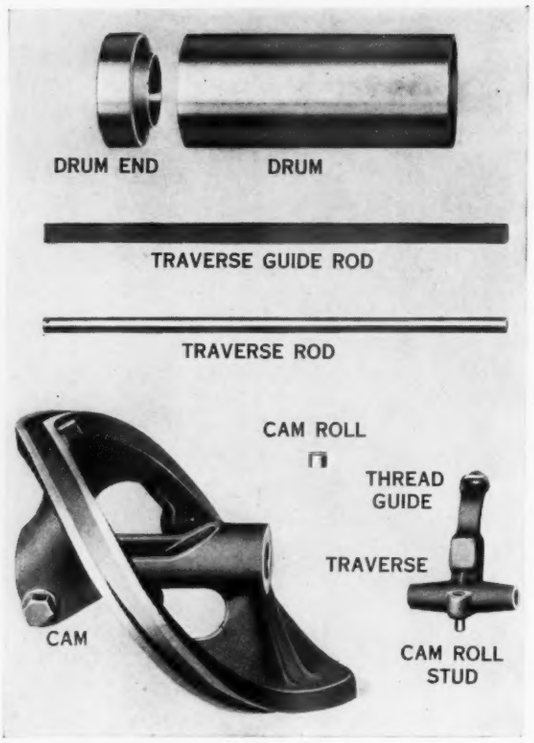

Roll Guide — Reciprocating Guide

PROBABLY the majority of mills do not carefully compute the loss in production where machine breakage occurs during working hours. This is an important factor and should have careful consideration in the selection of new machinery. • The roll guide shown above handling #20s yarn at 800 yards per minute will, in mill practice, wind 2 lbs. of yarn per hour without any stops for repairs. • The reciprocating guide has several wearing contacts, all of which affect to a certain extent the quality of the product, and its durability is far below that of the roll guide.

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week, and each section man is required to keep his work bench in an orderly condition. We have a rule that no gears or tools are allowed to be placed on tops of spinning creels while a frame is being repaired, which insures roving against contact with black grease from gears, etc. Doffer trucks, waste trucks and sweeping bins are cleaned daily, using a whisk broom at a location removed from the spinning frames.

CONTRIBUTOR NO. 6205.

EDITOR COTTON:

I note the request of "CONTRIBUTOR NO. 6201" for a good schedule of cleaning spinning frames in a room on 40s and 50s combed warp, and I am pleased to submit our schedule for cleaning frames in a spinning room of this kind, to obtain best results:

SCHEDULE

Steel rollers cleaned every two weeks
Top back roll picked every two weeks
Top front roll picked three times weekly
Neck and stand picked two times weekly
Top roving brushed two times weekly
Bottom roving brushed two times weekly
Roving ends brushed once a day
Roving rods brushed once a day
Cap bars brushed once a day
Top beams brushed once a day
Under beams brushed once a week
Ring rails brushed every doff
Top clearers picked three times a day
Roller weight brushed every four weeks
Spinner passes board two times daily
Cylinder and sampsons brushed and wiped weekly
Spindle rail brushed two times daily

This man asked also as to opinions on the practice of fanning off. We do no fanning except as noted from the foregoing schedule, that is, the ring rail is fanned at every doff. The cleaners, however, have rigid instructions that the fanning is to be done directly towards the floor. We feel that the less fanning done in the spinning room the cleaner the work will result, inasmuch as fanning, in general, merely removes dust and lint to settle at some other point. I find that after having worked out the foregoing schedule, we have reduced the lint and gouts on the yarn to a considerable extent. The spinning frames are kept in excellent condition by this method.

CONTRIBUTOR NO. 6208.

EDITOR COTTON:

I will reply to the question of "CONTRIBUTOR NO. 6201" who asked, on page 53 of the March issue of COTTON, about fanning out in the spinning room. He said that he runs 40s and 50s combed warp and fans out every hour, or nine times per day; and that his spinners are required to stop the frames on each side of the one being fanned and fan around the frame twice before starting it up.

I think fanning out in spinning is a good thing to do, if you fan out often enough and at the right time, but it is a bad thing if you fan out when the frames are dirty and covered with lint, for fanning out under such conditions will cause the yarn to get full of gouts.

I think that "CONTRIBUTOR NO. 6201" is fanning out plenty to keep his spinning clean, if he is fanning out at the right time. Our numbers run from 30s to 45s, and we fan out every hour in the day, but we have our guides run out first, and then fan out while they are clean. By doing it in this way it does not get any gouts into the yarn.

We do not stop any frames when cleaning. If one stops the frames to fan out, he loses production, for stopping every frame from one to three minutes, from nine to twelve times a day, he would lose around two hours per week on the spinning production, and I don't think where a fellow has to stop his frames it would be a paying proposition to fan out.

I will give you the cleaning system that we use on our spinning.

Monday: Clean steel rolls, back stands and wipe back guides.

Tuesday: Pick rollers and front stands and wipe back guides.

Wednesday: Wipe bottom and top roving, clean roller bars, wipe back guides.

Thursday: Pick rollers, clean rails, wipe back guides.

Friday morning: Clean ring rails and separators.

Friday evening: Pick front rolls, wipe back guides.

Saturday: Wipe fans, clean gear caps, roving rods, and wipe back guides.

In addition, we brush rails six times every day; pick top clearers twice a day; and run out guides and fan out every hour.

H. R. H. (N. C.)

The Upkeep of Card Room Machinery

EDITOR COTTON:

The overseer, card grinder and card hand all have an imporant job to do to get the best quality under ordinary working conditions. Quality is the heart of the subject under discussion. For instance, one has card clothing flats and lickers-in pretty well worn out, and as it is not suitable for the company to buy new material under present economic conditions, the main object of this discussion is to stress the fact that one must take what one has and make quality yarn. A good, conscientious, up-and-coming man can get better work from worn machinery than he has probably been getting, if he tries hard enough.

It is an overseer's duty to have a card grinder who will carry out instructions to the fullest detail, and it is the card grinder's duty to see that those working under him give him their best co-operation.

A few items to come under consideration are: first, to see that one has a uniform picker lap, as even yard per yard as it can be made; second, to see that the picker hand starts his lap around the lap pin smoothly and evenly, as this may save unnecessary waste and choked up cards; third, card hands should be trained to put laps down on the cards as smoothly and evenly as possible at the coiler heads; fourth, correct methods of stripping and cleaning.

Some carders like the vacuum stripper; personally, I like the brush stripping roll the best. When using a brush stripping roll, it is necessary to keep about three cards stopped all during the stripping process. When stripping cards by shifting belts to the loose pulley, cut out the lap feed and then stop the coiler head. This is to give the doffer a chance to strip the good fiber off the cylinder while the card

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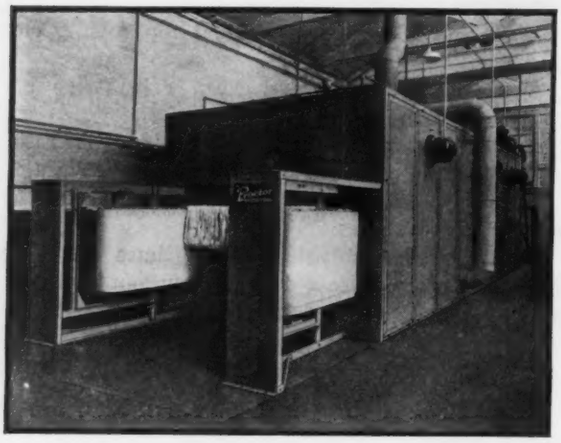

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is stopping. This clean waste is to be gathered up and taken back to the picker room as re-workable waste, thus saving a couple of hundred pounds of cotton per week that otherwise would be stripped off of the cylinder into card strips, and making a good saving. After stripping the cylinder, proceed to strip the doffer, and while the doffer is stripping, start the cotton to coming through and leave it running out on the floor while continuing to strip the card next to it. While the stripping roll is on the card next to it, the card hand drops back and puts up the end on the first card that has been stripped. After the piecing has been run through the coiler head then the dirty sliver is taken out and pieced up, the card hand being very careful to make good piecing.

Some points on cleaning: Doffer bonnets should be wiped off carefully after each stripping, and nothing should be allowed to drop into the work. Immediately after the first stripping in the mornings, the card hand should take a mop and rub the card all over, and the same thing should be done after the last stripping in the evening. At suitable times between these operations, all oil and dirt should be wiped from around the comb boxes and coiler heads, thus keeping the fronts of the cards as clean as possible.

A few points on card grinding: The first thing a grinder should do is to clean out his card after it has been stripped and run clean and see that there are no lumps in the screens and sides around the arches in the screens and sides around the arches. Then he should build up the card and run it backwards long enough to brush it out with a brush that is used for that purpose. Then after the card has been stopped off and cleaned up, the grinding rolls are placed in the brackets. The grinding rolls should be set to a number five card gauge at each end before the card has been started to grind. Then set the roller down on the cylinder at both sides to where a few sparks will go from one side to the other; then sound it with the ear at both sides, being very careful to get an even pressure all the way across the cylinder. This is where a good card grinder should know his business. After this the roll should be set on the doffer about one-fourth lighter in pressure than that of the cylinder. The card should grind about eight hours under ordinary conditions. A card can be ground in from four to six hours by being ground heavier, but this is to no good purpose in that it leaves one a wiry point which is curled on the end and makes shedding difficult, making a cloudy web. When one grinds eight hours to a fine, smooth point he gets a smooth even web.

A few points on card setting: Taking for granted that the floor is solid enough to keep down vibrations, setting should go as follows: Flats, back stand, 11/1000; next four stands, 9/1000; doffer to cylinder 7/1000; doffer comb, 22/1000; front plate, top and bottom 22/1000; back plate, top and bottom, 22/1000; cylinder screen, back 22/1000; cylinder screen, center 29/1000; cylinder screen, front ¼-inch; licker-in screen to licker-in as close as possible without rubbing; feed plate, 10/1000; mote

knife, top 10/1000; mote knife, bottom 7/1000.

After belts are put on, start the card up and examine it closely, after which one starts the lap through the card, and after running the card for a few minutes, put the end up through the coiler head.

I should like to have the comments of other readers.

J. S. B. (N. C.)

Textile Accident Prevention

EDITOR COTTON:

Accident prevention work in the textile industry has, in recent years, made considerable progress. As a result there is in most mills a planned program designed to avoid those injuries to life and limb which are not only a high charge on production but are a menace to the well-being of all operatives. In spite of these precautions, however, the accident rate in the textile industry remains high and all practical methods of increasing the effectiveness of prevention work deserve careful consideration. It is the object of this article, therefore, to consider some practical precautions which are calculated to prevent those accidents which tarnish the character and the reputation of the textile establishments in which they occur.

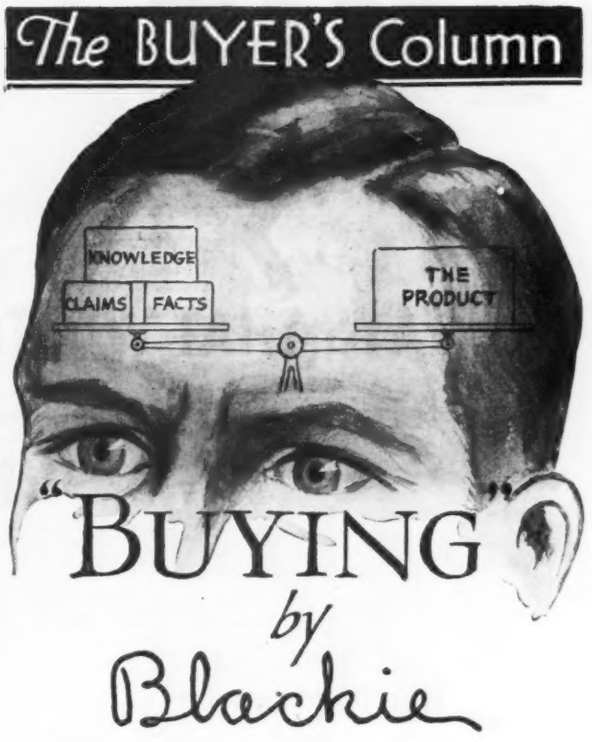
Mechanical Safeguarding.

One of the first steps in developing a program for the prevention of accidents is the safeguarding of mechanical equipment. It has been established that mechanical accidents in the textile industry total 45 per cent, as compared with 28 per cent in other industries. Responsibility for this high rate is due, in a large part, to the degree of exposure in the textile industry, caused by the present ratio of employees to machines.

The increased number of looms per weaver and spindles per spinning operative are but two examples of this increased exposure. In attending these machines the work must cover additional ground and the risk of accidents from falls is increased. In the case of the weave room, operatives must pass the machines a greater number of times which in itself increases the hazard. In addition, payment methods in many departments favor piece rates, which increase the employee's fatigue and the degree of human failure. These conditions should be met by extra precautions wherever possible designed to safeguard the worker from the moving exposed parts of machines and from unsafe floor conditions.

Another aspect is that equipment, repairs, and replacements cost money and in the present period of low profits, many companies have tried to economize in this direction, consequently there has been more than the usual deterioration of materials. It is false economy to defer replacements. The longer they are delayed, the worse the conditions become; every day increases the hazard and every cheap makeshift adds to the final cost. In life, in property, and in money, standard materials and prompt action are the cheapest in the end.

Although wide passages between machines are essential for safe working in all departments, it has to



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The buyer should analyze and absorb—not tear down and be indifferent.

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be admitted that this lay-out is not always given proper consideration. Machines are crowded together and the exposed moving parts so numerous that any visitor would stand in awe of seeing a man pass between the machines. Yet workers do this repeatedly, often with disastrous results. Many times a day, throughout the industry, serious accidents occur. Additional precautions in mechanical safeguarding where machines are crowded is of vital necessity.

Mechanical safeguarding is essential not only for machines but for belts, shafts, pulleys, etc. Heavy overhead driving belts should be provided with heavy wire mesh guards; in fact, all driving belts that threaten danger to operatives in the case of breakages should be adequately guarded, as should shafting and pulleys.

Proper care on the part of the fixers in any department cannot be too strongly emphasized. In cases where guards have to be removed for the purpose of fixing a machine, the fixers should be instructed to replace them before the machine is started again. Operatives often take advantage where the machine is properly safeguarded and the temporary removal of guards while the machine is in motion becomes a very serious hazard.

The question of shuttles flying out of the loom is not always fully understood. Practically every type of loom is provided with a shuttle guard and while this is important, it does not completely eliminate the danger of flying shuttles. As this hazard is most frequent when starting up a new warp, or when certain adjustments have been made on the loom, we can safely say that with due precaution on the part of the fixer the danger will be greatly minimized. If the shed is set too high or the picker set too low the shuttle may fly out. Faulty alignment of the reed or the race plate will cause the same defect. On all occasions when the danger of the shuttle flying out is anticipated the weaver should be told to stand clear by the fixer before he starts the loom.

If it can be said that there is any benefit to be derived from an accident, it is the lesson of prevention and the warning against repetition. A tragic example happened in the wet finishing room of a worsted mill. An employee was operating a crab machine when it was necessary to straighten out the edges of the cloth which was feeding into the rolls. In doing so his fingers came too close to the nip of the rolls and his right arm was pulled out at the shoulder. Shortly afterwards he died at the hospital. The use of bar guards at the nip has practically prevented any possibility of a recurrence of this particular type of accident. Like precautionary measures should be observed in the case of calenders, schreiners, and other machines where there is a danger of fingers being taken between the nip of the rolls.

Inefficient Housekeeping.

The old proverb tells us that "accidents will happen". In the light of modern knowledge we are able to say that accidents need not happen. What exactly is an accident? In the proper answer to this seemingly simple question lies the secret of success in true accident prevention. It is not mere theory, but practical and fundamental principles upon which all safety work

must be based.

A simple illustration brings out the principle of accident prevention. A bobbin drops on the floor of the weave room. It may be there until it is picked up without anyone so much as stepping on it, or else someone may step on it without being hurt. A third possibility is that an employee may slip and injure himself slightly or seriously. To many people the accident occurs when the man is hurt, but it occurred when the bobbin dropped on the floor in the first place.

The importance of bobbins on the floor as being a serious hazard is very often overlooked. To step on one of these and fall to the floor close to machinery in motion may result in very serious injuries. Every person in the department, no matter what their job is, should be instructed to keep the floor as clean as possible. Safeguarding habits are contagious; setting the example is the secret of plant discipline. True accident prevention is the recognition and prompt removal of hazards before someone is hurt.

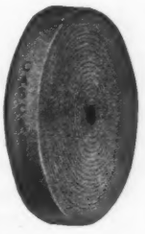
Regardless of how well machines are safeguarded, should the housekeeping be inefficient accidents are liable to happen. Alleys and passageways should be kept free from obstacles over which men may stumble and fall; proper and adequate lighting is very important in preventing accidents and careful supervision is required at all times to insure safe piling of materials.

In all textile plants the floors get very oily and greasy and unless a great deal of care is taken in the washing of these floors and seeing that it is done at a proper time or a space sufficiently small at a time so that it can be mopped up quickly, it does present a very bad hazard for slipping and falling.

Practices which amplify the possibilities of injuries should be discouraged; the writer has witnessed painful accidents occur to men who on coming to the mill put on a pair of old shoes with part of the uppers cut away, the unproteeted part of the foot accidentally strikes a sharp edge of a broken bobbin can and is badly cut.

One of the important phases of accident prevention is obtaining and holding co-operation of all employees. It is imperative in certain cases that suitable clothing should be worn to minimize the danger of accidents occurring. No matter whether uniforms are provided by the firm or not, the workers will generally respond to the logical appeal for precautionary measures to be taken when operations with unsuitable clothing are hazardous. The fault lies in the supervision which neglects to point out the dangers.

An interesting case is on record of a number of employees in a cloth printing plant who formed the habit of hanging their working clothes near barrels containing aniline oil when they finished work at night. For some time a number of them experienced illness of a peculiar sort during the course of their working hours, often necessitating some of the men leaving work for a short period. Finally one man collapsed soon after changing his clothes in the morning. He was rushed to the hospital and it was found that he was suffering from a severe case of poisoning and he came very near death from the effects. The cause was only detected after a prolonged investigation and the space about the barrels was fenced off



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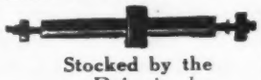

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Human Failures.

Something has been said about minimizing the danger of hazardous equipment and proper housekeeping, but the need for eliminating human weaknesses which make employees prone to accidents has not received the attention which it deserves. Accidents due to mechanical defects will be reduced by competent plant maintenance as mechanical efficiency in this direction is obtained, while human failures can be reduced by educating the employees to such a point that foolhardiness and carelessness is eliminated or greatly reduced.

Here is a case in point. A man was drilling a hole in the cement floor of the dyehouse. The head of the chisel was badly burred over and the chance of a piece flying off and causing eye injury was apparent. It was suggested that he should have the head of the chisel trimmed as the use of it in such a condition might cause him to lose an eye. It was found that the man had only one eye and on being questioned, he revealed the fact that some years before a piece had broken off the head of a chisel and injured the eye so badly that it had to be removed. It seems incredible that a man who has lost one eye from a similar defect should so thoughtlessly risk total blindness by exposing the other eye to a similar fate.

Safe workmanship becomes habitual through repetition of safe practices. To encourage repetition requires educational effort to keep the importance of safety uppermost in the mind of the employees. They should be told what they should do, not what they should not do. Positive suggestion is the sound basis of appeal to employees as having a psychological but beneficial effect. Employees upon being engaged are more susceptible to direction and leadership than at any other time. It is therefore highly desirable at this time to train such a person in safe practices and the safe methods of performing the work undertaken. A loom fixer in a certain mill had his arm badly fractured when an inexperienced operator started the loom without instructions, catching the fixer's arm. Proper instructions to new or inexperienced employees are necessary to prevent accidents caused by human failures.

First-Aid Instruction.

It is good policy for the management of a mill to arrange the formation of group studies in first-aid work. Qualified medical practitioners will, in most cases, be willing to address gatherings of workers anxious to acquire information, so that when accidents do occur they can be at once treated and serious consequences prevented. Likewise each department in the mill should carry a first-aid box containing the necessary dressings and accessories.

But first-aid work is to minimize the effect of accidents. The most constructive work is that aimed at prevention—getting at the root of the matter. The management can, first of all, make sure that the mill is in good condition, after which it remains to educate the employees so that they will realize the necessity for doing all they can to safeguard themselves. Group meetings of overseers or operatives to discuss accident prevention are to be highly recommended.

Accidents in the textile mill interfere with the work of others, require the training of less competent men to perform the work of the injured employees and, in general, disrupt the organization. The indirect costs of accidents, usually absorbed in overhead expenses, represent a considerable charge on industry and justify continuous preventive effort.

MILTON MEEK.

Card Grinding Methods and Speeds.

In which a discussion of several months ago is revived by an eastern mill man . . . . . .

EDITOR COTTON:

I should like to revive the discussion on card grinding speeds, which was presented in such an interesting manner some months back by "CONTRIBUTOR NO. 5080" and "CONTRIBUTOR NO. 6026" (page 91, February 1932 COTTON). The point of interest which stirred my curiosity was the mention made of the statement, "This experience shows the danger of taking things for granted. We have been grinding for seven years at the slow speed (430 r.p.m. grinder roll) just because we took it for granted that the rolls were all right."

Then when I studied the table of comparative speeds I am astonished to learn that it took "CONTRIBUTOR NO. 5080" seven years to discover the error, and may I say it is not surprising to me that the work off of the cards is back to normal with the higher speed (700 r.p.m. grinder roll), because it is certainly obvious that his card wire during that seven years received very little true grinding efficiency. Polishing, yes—but not the efficient carding point, which, needless to say, is the aim of all good carders.

It may be of interest to know that in 25 years of experience in this country and England, I have never known of or seen grinding rolls revolving at less than 700 r.p.m. when grinding cylinders or doffers—flat grinders, especially the traverse disc type, at 750 r.p.m.

However, I will not endeavor to furnish any calculations of surface speeds, etc., but will say in one short phrase, speed is of paramount importance in the matter of grinding the cylinder, doffer and flat wire fillet, especially in relation to the latter.

To my way of thinking, which is governed more or less by long experience, it appears that there cannot be any hard and fast rule set for the amount of time it requires for grinding cards, which will apply to all alike.

The man in charge of the organization must be guided by the grade of stock being carded, numbers spun, and also the weight of stock being carded.

Frequent and light grinding should always supersede heavy grinding at long intervals, with of course the correct abrasive material on the rolls, and not the worn-out kind so often observed and tolerated in many carding departments.

It is proper to liken the grinding of card clothing to the stropping of a razor, and we know that con-

tinual and frequent stropping is necessary to enable the razor to function correctly. So, with card clothing, frequent light grinding at short intervals will freshen up the points in order that they will respond and perform the work required.

Now, referring to the diagrams of various wire teeth, as given by "CONTRIBUTOR No. 5080," which are supposed to be the result of different settings of the grinding rolls. I fail to see how he acquired at least the form of tooth illustrated in diagram *B* and diagram *C*. Diagram *B* to his point of view is the perfect tooth. I fail to agree with our friend because I do not understand how traverse disc grinders acting the way they are supposed to act when in operation, can produce this shape of tooth, and whichever way I view the diagram I cannot be convinced. Of course there is the possibility that my vision is deceptive.

However, my observation is fortified by the fact that when traverse grinders, that is, the disc type, are in action on any organs of the card, which require grinding, the emery rolls accomplish a side brushing action, as well as a forward rotary action, that is, grinding from the "back" to the "front" of the teeth, thereby completing a clean sharp point which is as near to a side ground point as surface grinding allows.

That is the kind of point we require. Take notice of those grooves of emery grains on emery fillet; this fact alone should convince us of the manufacturer's intention to supply the means as near as possible to accomplish side grinding on both sides of the teeth.

The main reasons for this side grinding are, first, that the space between the wires is increased by reason of the side portions of the wire being ground away, giving better cleaning facilities for the fibers and preventing too much clogging of the wire by the retention of seeds or other trash. Secondly, because the cutting or abrasion by emery upon the wire teeth is not to tend to a polished effect, and of course it is not desirable to obtain the latter.

Those of us who have taken the trouble to examine a side ground wire point through a microscope will know that upon observation we noticed that on the surface of the wire there are numerous minute corrugations, with very fine spikes of metal standing clear of the main body of the wire and all around the edges of the point. These fine spikes, as I choose to call them, are the fiber carriers, and they are truly the mainstays of the carding ability of the wire. Those are the little fellows that kind of stick to the finger tips when one feels the wire for the so-called "edge," when there is any, and they have disappeared when the "edge" has gone, but re-grinding in the correct way produces or freshens up that spiked effect. To illustrate this side grinding action, let us look at Diagram 1 and Diagram 2, shown on page 82, which I have taken from *Card Grinding in Theory and Practice*, published by Dronsfield Brothers, Ltd. It is claimed that this side deflection of the card teeth, as illustrated, when depressed by emery contact, that is, when the rolls are set correctly, is at an angle of about nine degrees. Diagram 1 shows the teeth being deflected

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one way by the grinder, as soon as it comes in contact and immediately after the grinder or disc has passed the teeth resume their regular position. Diagram 2 illustrates the result of the return passage over the wire, hence the side brushing action as each side of the

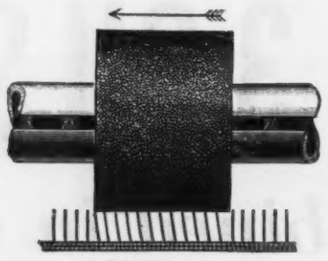


Diagram 1

wire is being gently pushed over and abraded, afterwards regaining its normal position.

The foregoing is definitely accredited to the proper use of the traverse wheel or disc grinder, as the result obtained by the long or dead roll, commonly used for flat grinding, is not nearly so true. Admitted, we are provided with the use of a traverse motion on the long grinding roll which gives the lateral movement, which of course prevents the possibility of producing a "chisel" edge wire, but owing to the inability of the wire teeth to escape from contact with the emery fillet

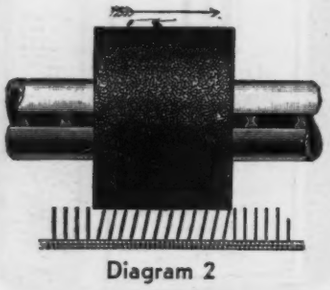


Diagram 2

except by its rotary or forward motion, the side brushing or grinding effect is not so clean as with the traverse wheel grinder.

That is the chief reason why so many English mills do not use the long roll for grinding flats. The reason is clear enough when we realize that when using the traverse wheel grinder, the wire points have considerable time to cool off before the emery contacts again, but with the long roll the emery is in contact across the full face of the wire at every revolution. Hence, the wire points must receive considerable punishment by incessant abrasion. Therefore, the result must be "fusing" or "hooking" of the metal of the wire.

I notice our friend, "CONTRIBUTOR NO. 6026," seems to have what might be called a good system of grinding by having his grinders grind five cards every ten hours. Surely, I believe he is rushing his grinders—they are liable to slip up on their job at every chance which presents itself and five cards every ten hours is what I call crowding. In his last paragraph he states he is running night and day and I am wondering if those cards are producing nights or grinding.

Here I would like to point out that although I am a frequent, light grinding adherent, there is such a thing as grinding too frequently and too lightly with the result that "topping" the wire is all that is accomplished; in other words, the points are polished, although correct speeds predominate.

E. D. (R. I.)

Lever Weighting on Draw Frames

EDITOR COTTON:

Some months ago I ran into a bit of trouble on drawing frames which I find later caused several other carders the same difficulty, so in trying to do a "good turn daily" I am giving my brethren the low-down on it through the columns of "HOW OTHER MEN MANAGE". Usually there are strings attached to anything gratis, so I'll tie a couple on to this, namely, anyone having a better way of overcoming the trouble outlined must tell us about it, and anyone who does not agree to this method that I use 100 per cent or who doubts it any part of any per cent, must tell us about that also.

My breaker drawing sliver weighs 75 grains and my finisher drawing weighs 80 grains, both drawing having a 275 r.p.m. front roll speed. My slubber roving is .50-hank, intermediate roving 1.40-hank, warp speeder roving 4.00-hank, and filling speeder roving 4.75-hank—and the stock is all from Strict Low Middling cotton.

I had been using this organization for more than a year when my trouble showed up, so I knew that it was some new condition.

The first thing that happened was that my ends down on drawing frames were unusually high, and each end that came down choked the trumpet, indicating that the stock was heavier there than elsewhere. Next, my slubbers began to behave in such a way that I am sure any link sausage manufacturer would have paid a fancy price for the product for use as a pattern if he could have seen the beautiful sausage in links effect which my slubbers turned out. (I still called it roving.)

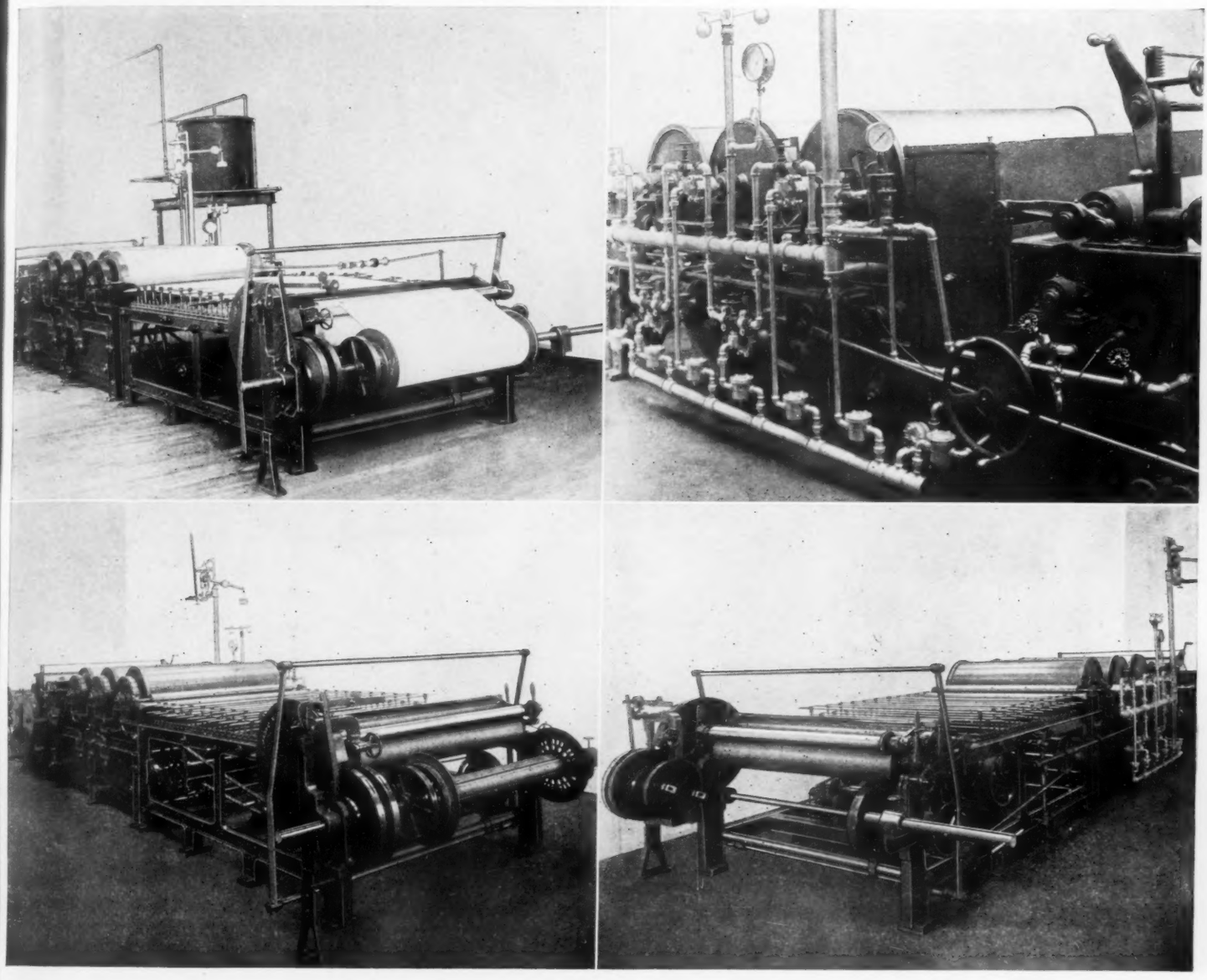
After a thorough examination of my cotton and a review of my classification sheets I found that I had started in on a new cotton that was of longer staple and of a very wiry character. I had run this type of cotton before and had noticed that it did not draft as well as a softer cotton, but never had it behaved like this particular lot did.

The first thing I did was to open the rollers on both breaker and finishing drawing, but the benefits were little, if any.

Next, I raised the clearers on the draw frames with the frame running, and what I saw was an eyeful. The top rolls on each frame acted much like an old time seesaw board in a playground for kiddies; first one end of the roller was up, then it would come down, and the other one would rise to "heights unknown".

It didn't take me long to see what a hole I was in and to make up my mind that something had to be done.

I increased the weight on the second, third and back rolls up to twice the normal weighting of the frame, but that didn't eliminate my trouble, even



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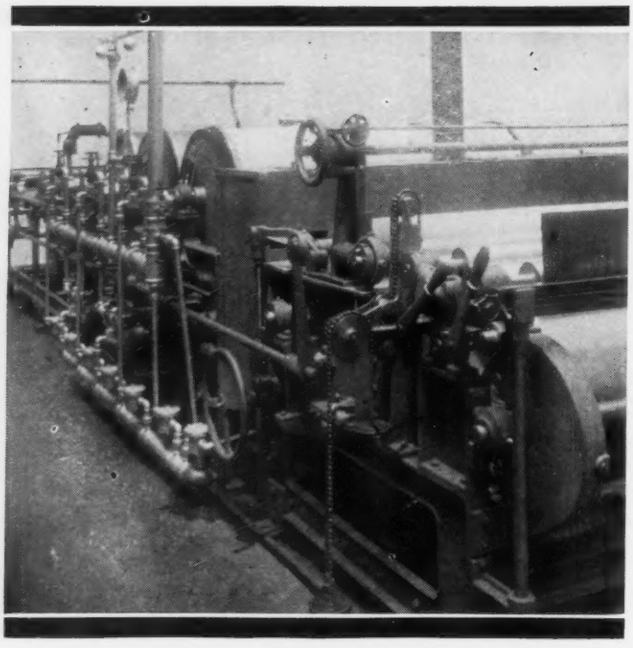

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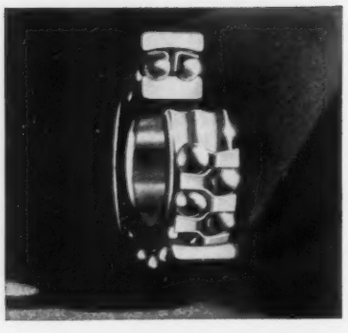

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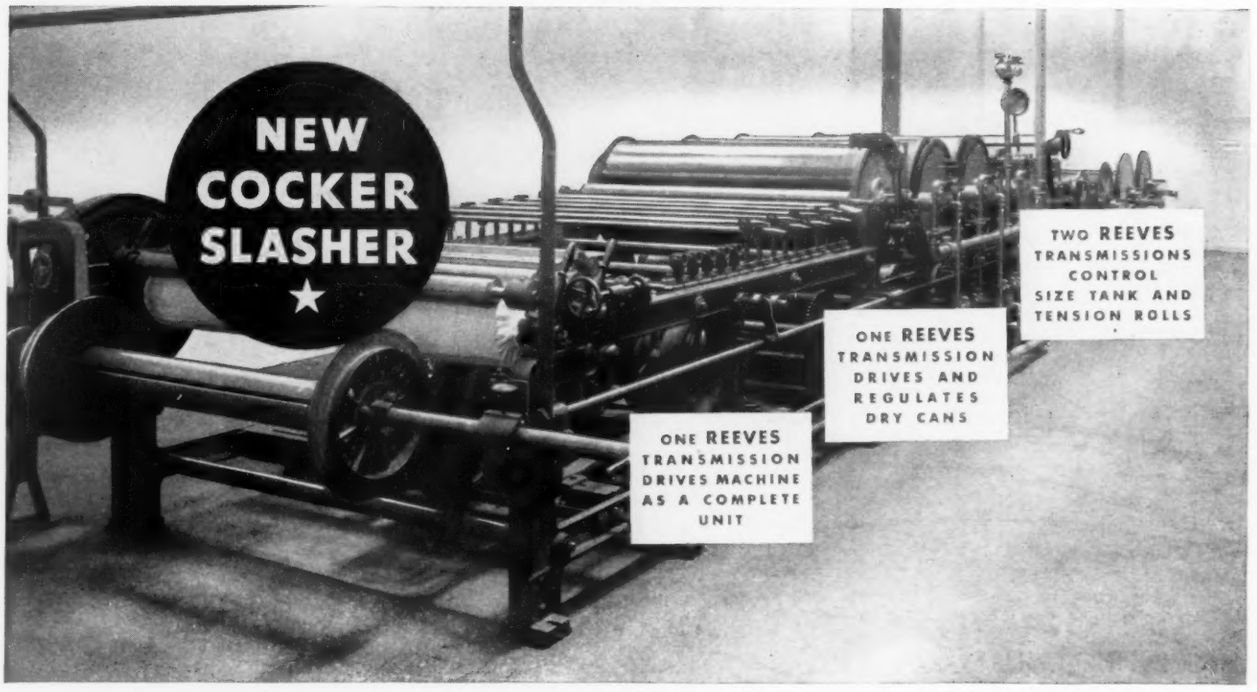
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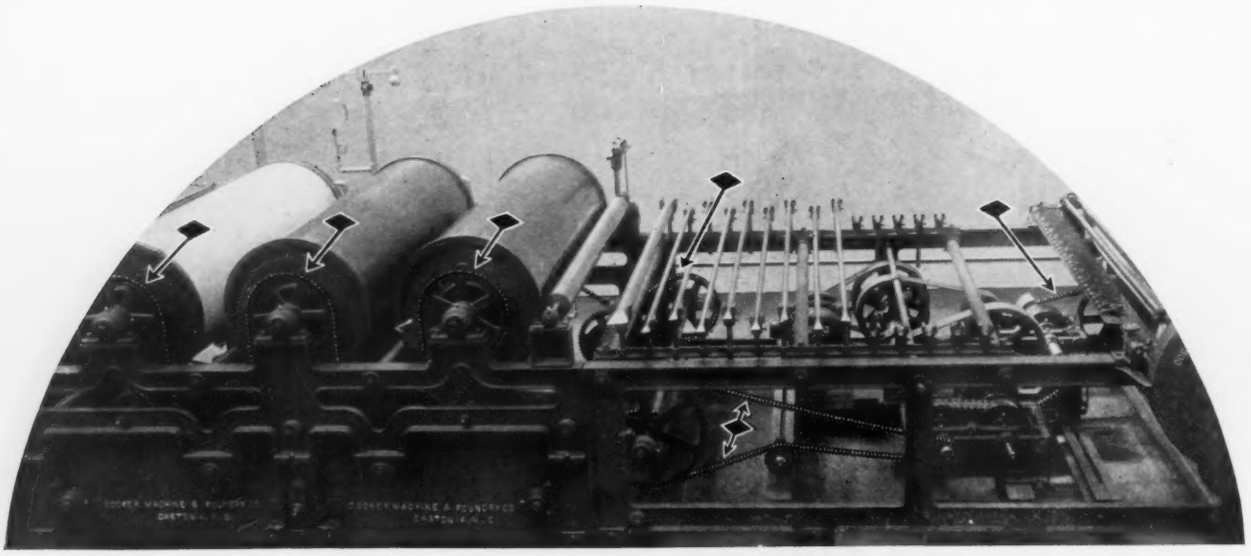

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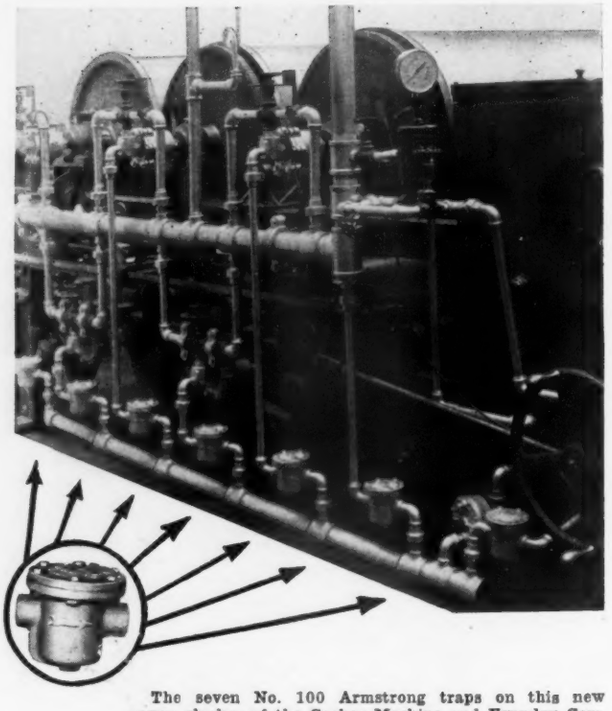

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though it helped.

The plan I finally adopted was lever weighting, similar to lever weighting on a spinning frame.

My drawing frames are Saco-Lowell, 1919, and are "good as new".

I made two hangers, as shown at *A* and *B* in Fig. 1, from 2x2-inch angle iron, and cut them 1¾-inch wide, and bored a ½-inch hole in each end of the hanger. Next I cut a piece of ½-inch cold rolled steel

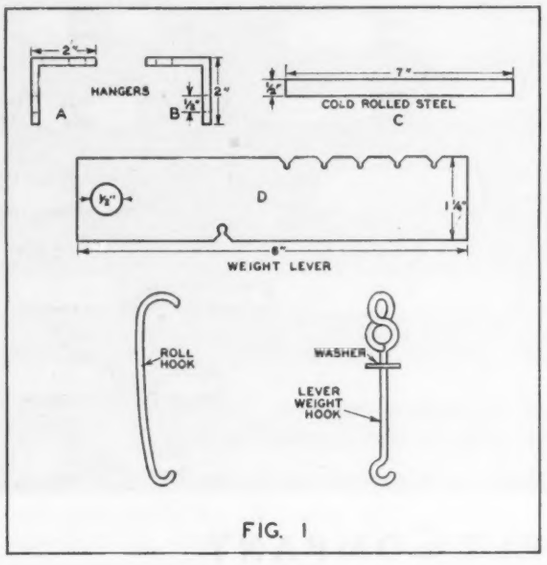

FIG. 1

7 inches long, and a piece of 3/16x1¼x6-inch band iron, and assembled these parts as shown in the illustration.

These parts were assembled on the draw frame in the following manner. The carriage bolt holding the back side of the roll stand to the beam was loosed, the nut removed, and hanger *A* was fastened underneath the beam with the same bolt. It was necessary to take the bolt out and turn it upside down, putting the nut

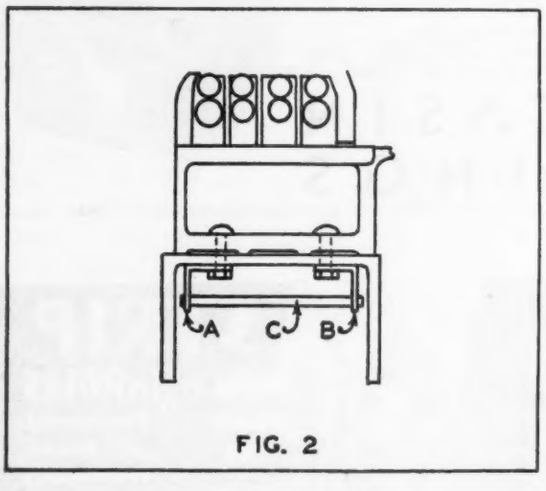

FIG. 2

on the underside of the beam. Next three weight levers, *D* in Fig. 1, were mounted on the weight shaft *C*, and one end of the weight shaft *C* was inserted into the hole in hanger *B*, having the single notch in the weight lever turned down, and the 5 notches turned upward. Next the free end of the weight shaft *D* was inserted in the hole in hanger *A*, and the bolt holding the front side of the roll stand was used to fasten hanger *B* in the same manner as hanger *A* was fastened.

The parts in position after assembly are shown in Fig. 2 and Fig. 3.

I used the rule for weights and levers—multiply distance from roll hook to weight hook in inches x pounds of weight, and this sum, divided by the dis-

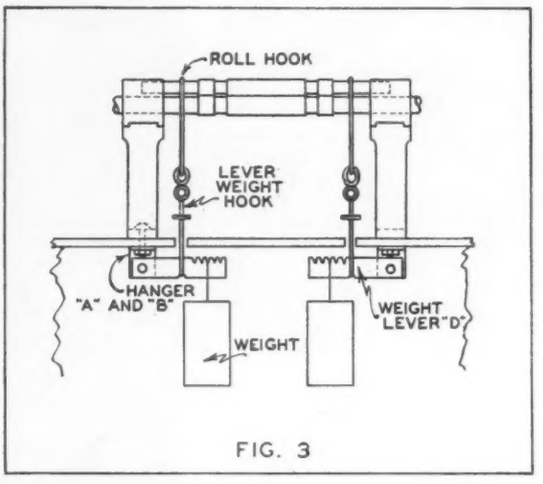

FIG. 3

tance from the hanger end of the weight lever to the roll hook plus weight (pounds) = the weight obtained by lever weighting.

In this particular case, from hanger end of lever to roll hook was 2½ inches, and from roll hook to weight lever hook was 1 inch, and the weight used was 18 pounds. Example,—

$$\frac{1 \times 18}{2\frac{1}{2}} = 7.2$$

$$7.2 + 18 = 25.2 \text{ lbs.}$$

The weight lever having five notches for the weight hook, it is possible to even double the weight pressure as applied to the top rolls.

I have 288 deliveries of drawing equipped as described, and I feel that the results justify the trouble and cost. I might add, however, that the cost other than labor is very little, because of the fact that almost every mill has a junk pile from which practically all of the material can be secured.

Since paying close attention to the weighting of draw frame rolls I am convinced that the weights as originally supplied are not enough even for a 42-grain sliver.

I might add that today my size report shows: 4.08-hank roving; 30.54s warp yarn; 60 pounds breaking strength.

I am passing this along to the fellows who may have had or may be having the trouble that I and some others have experienced and remedied.

CONTRIBUTOR NO. 6123.

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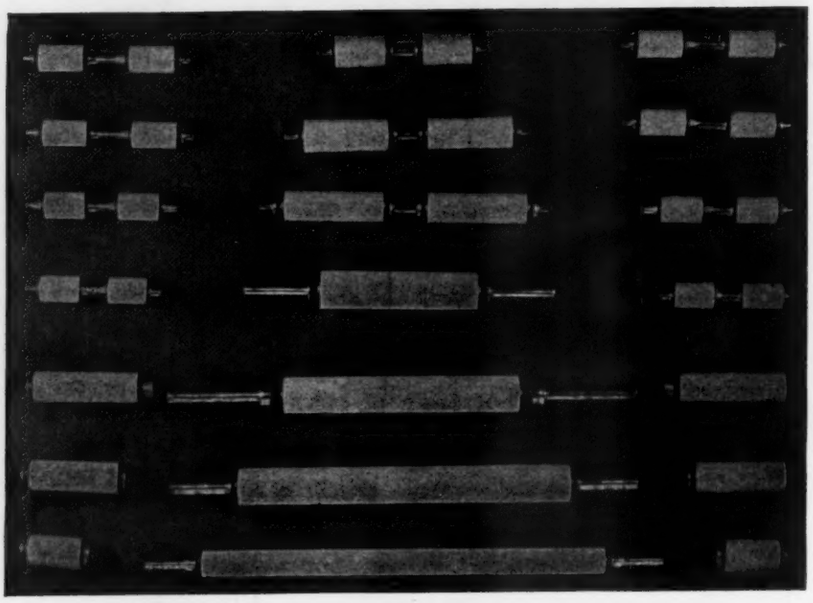

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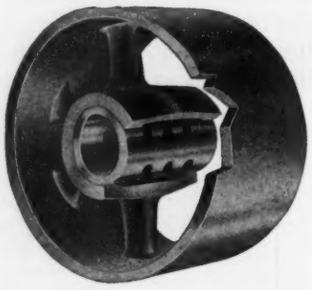

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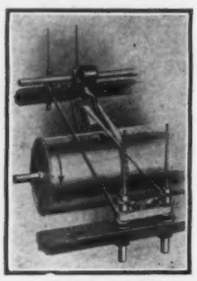

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(Continued from page 42.)

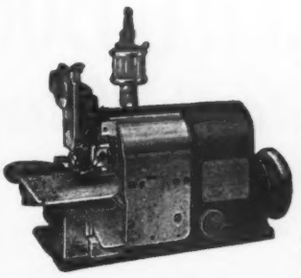
10 per cent strength. It is necessary to boil this paste with stirring to get a homogeneous dispersion, without which trouble may be encountered in use from small jell spots on the goods. Vat dyes use this gum as a thickening agent in the pigment pad method while it is used to some extent as a binding agent to assist in preventing dusting of backfilling mixes carrying heavy mineral fillings. It is also used to some extent with mercerized shirtings, owing to its transparent film which does not appreciably reduce the lustre.

Seed gums are also offered to finishers under various names, most of which are locust bean products imported from France and England. These are sold as finely granulated, light colored powders or as thick jells containing about 5 per cent solids, which give colorless and transparent tough films on drying. The powder is dissolved by soaking in cold water followed by boiling with stirring. Small amounts of acid or oxidizing agents lower the viscosity, while alkalis thicken it. Like tragacanth, it is a complex carbohydrate, probably a pecto-cellulose, and forms galactan and mannan on hydrolosis with acid.

Like tragacanth, its greatest use is in printing, although it is used to some extent in finishing, because of its exceptionally good binding power, transparency and flexibility. It is also used in some types of waterproofing since the gum reacts with lead or aluminum acetates and bichromates to form water-resistant films.

The finisher thus has a variety of stiffening and body building materials to produce the various effects demanded, the most economical selection of which depends, of course, upon his skill, knowledge of their properties and market conditions. The routing of the cloth previous to starching also affects his selection for the mix for a given finish. Consideration of economy, time and range operation necessitates starching many fabrics directly from the water angle in the wet condition, while others may be dried previously to this. Less finish is absorbed from a given mix in the former than in the latter method. In the first system of operation, there is insufficient time for the starch mix to thoroughly displace the water carried by the goods with a resultant surface finish. A thick mix, therefore, gives a heavier and fuller hand than thin ones under these conditions. Thin mixes, however, do have an opportunity to penetrate the yarn when starching dried cloth, thus giving heavier and fuller finishes because of this.

Editor's Note: The first article in the series by Mr. Clark, of which the foregoing is the fourth, appeared in the June issue, and discussed the important subject of Water as a material used in finishing cotton piece goods. The second, in July, and the third in August, discussed the subject of softeners of various kinds. The fourth above, begins a discussion of starches, gums and dextrines, and contains some valuable illustrations of starch granules. In the next installment, to appear in October, practical pointers on handling starches, etc., in the plant operations, will be given.



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91. Illustrated Buyers' Guide and Catalogue—Of interest to every dyehouse executive, not only telling what dyehouse equipment is available in Monel Metal but also where to get it. The International Nickel Co., Inc., 67 Wall St., New York, N. Y.

92. Silicates of Soda—A review of the properties of silicates of soda and their various uses. Philadelphia Quartz Co., 121 S. Third St., Philadelphia, Pa.

93. Metso — Describing this industrial cleanser which has wide use in industrial cleaning of metals, floors, etc., and is used in kier boiling, silk and rayon degumming. Philadelphia Quartz Co., 121 S. Third St., Philadelphia, Pa.

94. New Development by Onyx—Eight-page booklet describing and giving uses of new developments in sulphonated aliphatic compounds . . . called Aliphatic Ester Sulphate and Glyceryl Sulphates. Onyx Oil & Chemical Co., 15 Exchange Place, Jersey City, N. J.

95. Onyx Processing and Finishing Compound Catalog — A thirty-two page booklet listing and describing entire line of processing and finishing compounds, covering every process on all types of fabric. Onyx Oil & Chemical Co., 15 Exchange Place, Jersey City, N. J.

96. B. & H. Non-Flammable Solvents—describing the characteristics and many uses of non-flammable solvents. R. & H. Chemicals Dept., E. I. duPont de Nemours & Co., Wilmington, Del.

97. Suggestions For The Modern Silk and Rayon Throwster — describing the various uses for Laurel Brand Products and giving valuable suggestions in silk-soaking, degumming, dyeing, sizing and finishing. Laurel Soap Mfg. Co., Inc., Tioga, Thompson & Almond Sts., Philadelphia, Pa.

98. Saving Labor, Material and Power in the Textile Industry. A 20 page booklet showing the advantages and typical installations of temperature, pressure and humidity instruments and controllers in various processes of textile manufacturing. Foxboro Co., Foxboro, Mass.

99. Bulletin 177, Temperature Controllers. 48 page booklet describing and illustrating the various types of controllers, charts, valves, etc., and their industrial uses. Foxboro Co., Foxboro, Mass.

102. White and Light Shade Cotton Fabrics Dyeing and Finishing. National Oil Products Co., Harrison, N. J.

103. Throwing Rayon Crepe. National Oil Products Co., Harrison, N. J.

104. Warp Sizing. National Oil Products Co., Harrison, N. J.

105. Mildew Prevention. National Oil Products Co., Harrison, N. J.

106. Cotton System Warp Sizing on Multiple Cylinder Machines—a folder showing the advantages of this type of machine in making warps of acetate and other synthetic yarns and spun silk — Charles B. Johnson, Paterson, N. J.

107. Complete Information on Alemite Lubrication. Showing how costs can be reduced through proper lubrication. Alemite Corp., 1828 Diversey Blvd., Chicago, Ill.

108. Thickening Materials for Textile Printing—discussing the more important materials and methods employed in the preparation of color thickenings so that it may be properly and economically transferred to the cloth in textile printing. Stein, Hall & Co., Inc., 285 Madison Ave., New York City, N. Y.

109. Some Properties of Starch and Dextrine.—Explaining certain fundamental properties of starch and its derivatives and their action when heated and agitated. Stein, Hall & Co., Inc., 285 Madison Ave., New York City, N. Y.

110. 3-In-One for Industrial Uses—showing the many industrial uses and advantages of this oil. Three-In-One Oil Co., 70 Varick St., New York, N. Y.

111. Roll Spacing Determinator—showing and describing this machine for cotton mills which eliminates the problems of roll setting to the mill man and determines by mechanical means the exact spacing considering staple, character, size and twist. The Belger Co., 36 Pleasant St., Watertown, Mass.

112. Belger Long Draft — describing "ELASTIX" Rolls with which drafts from 16 to 17 on carded and 20 to 22 on combed stock can be achieved without changing the spinning frame. The Belger Co., 36 Pleasant St., Watertown, Mass.

113. Card Room Testing Equipment—describing the advantages gained by having the product of the card room machinery tested in the same way as the yarn is tested in the spinning room. The Belger Co., 36 Pleasant St., Watertown, Mass.

114. Denman Parts for All Makes of Looms—showing drawings and dimensions of Denman pickers, hold-ups, bumpers, and bunters made of fabric and vulcanized rubber. Denman Tire & Rubber Co., Warren, Ohio.

115. How to Cut Cloth Room Costs with Automatic Picking Machines and Improved Inspecting Machines—Hermas Machine Company, Warburton Ave., Hawthorne, N. J.

116. Arcy—Telling in an interesting way the story of Arcy, which completely liquefies ordinary thick boiling pearl starch, and its many advantages. Drake Corporation, Norfolk, Va.

117. Anti-Friction Bearings as Applied to Spinning, Drawing and Twisting Frames—This bulletin shows with detailed drawings how a simplified design of roller bearing applications is made to replace the plain babbitt bearings and lists the advantages that are gained. It deals primarily with better continuous production and in consequence freedom from equipment care and repairs. Hyatt Roller Bearing Co., P. O. Box 476, Newark, N. J.

118. Cotton Picking, Opening and Cleaning Machinery, Cards, Combers, Roving, Drawing, Spinning, Twisting, Rings, Worsted Machinery and Woolen Machinery — Pamphlets are issued on each of the individual machines. In writing indicate special pamphlets desired. Whitin Machine Works, Whitinsville, Mass.

1. Cotton Picking, Carding and Spinning—Covered by three different catalogs. Picking catalog covers Opening and Picking Machinery; Card Room catalog covers Cards, Combers and Roving Frames; Yarn Machinery catalog covers Spinning, Twisting, Spooling, Quilling and Reeling. By Whitin Machine Works, Whitinsville, Mass.

2. Pepperell Equipment—10 page illustrated booklet showing High Speed Warping from cones as adopted by Pepperell Manufacturing Company after thorough experiments, installation and product photographs. Issued by Universal Winding Company, Boston, Mass.

4. New Methods of Opening Cotton, also "Brown" Automatic Mixing and Cleaning Distributor — Illustrated booklets showing advantages of Centrif-Air Cotton Cleaning System. Pamphlets also on better picking and carding and pneumatic trunk line cleaner. Issued by Centrif-Air Machine Company, Atlanta, Ga.

10. Leathers, Textile—Booklet No. 101, 48 pages. Illustrated. Showing BONDARON Check Straps—Lug Straps—Harness Straps—Pickers—Belting, both round and flat, etc. Horsepower tables and other interesting information. By Charles Bond Company, 617 Arch Street, Philadelphia, Pa.

11. Whitinsville Rings—16 page illustrated booklet, describing ring manufacture, measurements, types, uses. How to determine flange sizes. By Whitinsville Spinning Ring Co. Whitinsville Mass.

15. The Powers System of Thermostatic Control — "Slasher Room is Bottle-Neck of Textile Mill." 18 page illustrated booklet showing importance of proper treatment of cloth in slasher room and advantages of Thermostat over hand control. Also room temperature control illustrations. Issued by Powers Regulator Co. 2739 Greenview Ave., Chicago, Ill.

21. Warp Sizing and Composition of Cotton—Folder containing reprints of articles carried by textile publications of interest to progressive mill superintendents. By Seydel-Wooley Co., 748 Rice St., Atlanta, Ga.

23. Practice of Rayon Sizing in American Mills, Raygomm, Lakoe Gum—Three booklets on products for sizing and finishing rayon and other textiles, presented by Stein Hall & Co., Inc., 285 Madison Ave., New York, N. Y.

25. "Lupogum" and "Monopole Oil"—Two booklets on textile sizing and finishing products. Jacques Wolf & Company, Passaic, N. J.

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38. Sleaziness in Full Fashioned Knitting—Illustrated survey with samples of fabric showing causes of sleaziness and methods to be employed in eliminating it.—By Textile Machine Works, Reading Pa. (This company also issues parts catalog for Reading full fashioned machine with general information on subject of full fashioned knitting.)

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72. The Merrow Butted Seam—A 16-page booklet defining and illustrating the Butted seam, describing its properties and outlining some of the advantages to be gained by its use in textile fabrics. The Merrow Machine Co., Hartford, Conn.

73. New Reeves Catalog No. 99—A treatise on efficiency speed control—including valuable information of special importance to textile industry men and production executives outlining advanced methods of speed regulation. Reeves Pulley Company, Columbus, Indiana.

75. The Facts About Armstrong's Seamless Cork Cots — A helpful book containing plain facts, cost studies based on actual mill records, expert analysis, complete details on the advantages of Armstrong's Seamless Cork Cots. Armstrong Cork & Insulation Co., 923 Arch Street, Lancaster, Pa.

77. Bulletin S 200—Illustrating and describing the new Reeves Variable Speed Drive for spinning and twister frames, explaining its many distinct advantages, and giving charted results of exacting tests. Reeves Pulley Company, Columbus, Indiana.

78. Booklet L 1289 A—Loom Motors and Control—giving details of the low installation, operating and maintenance cost of Westinghouse Loom Motors. Westinghouse Electric & Manufacturing Company, Room 2 N, East Pittsburgh, Pa.

88. Dayton Cog Belt Catalog—A 32 page booklet full of vital information on power drives, plainly and simply assembled and arranged so that anyone can select the proper standard drive for any condition. It also provides data for the calculation of drives where acquired. The Dayton Rubber Mfg. Co., Dept. C-11, Dayton, Ohio.

90. Atwood Booklet. Describing Atwood Winders, twisters, wire swifts, and various types of feed rolls—useful to throwsters interested in learning the principal features of various Atwood machines. Atwood Machine Co., Stonington, Conn.

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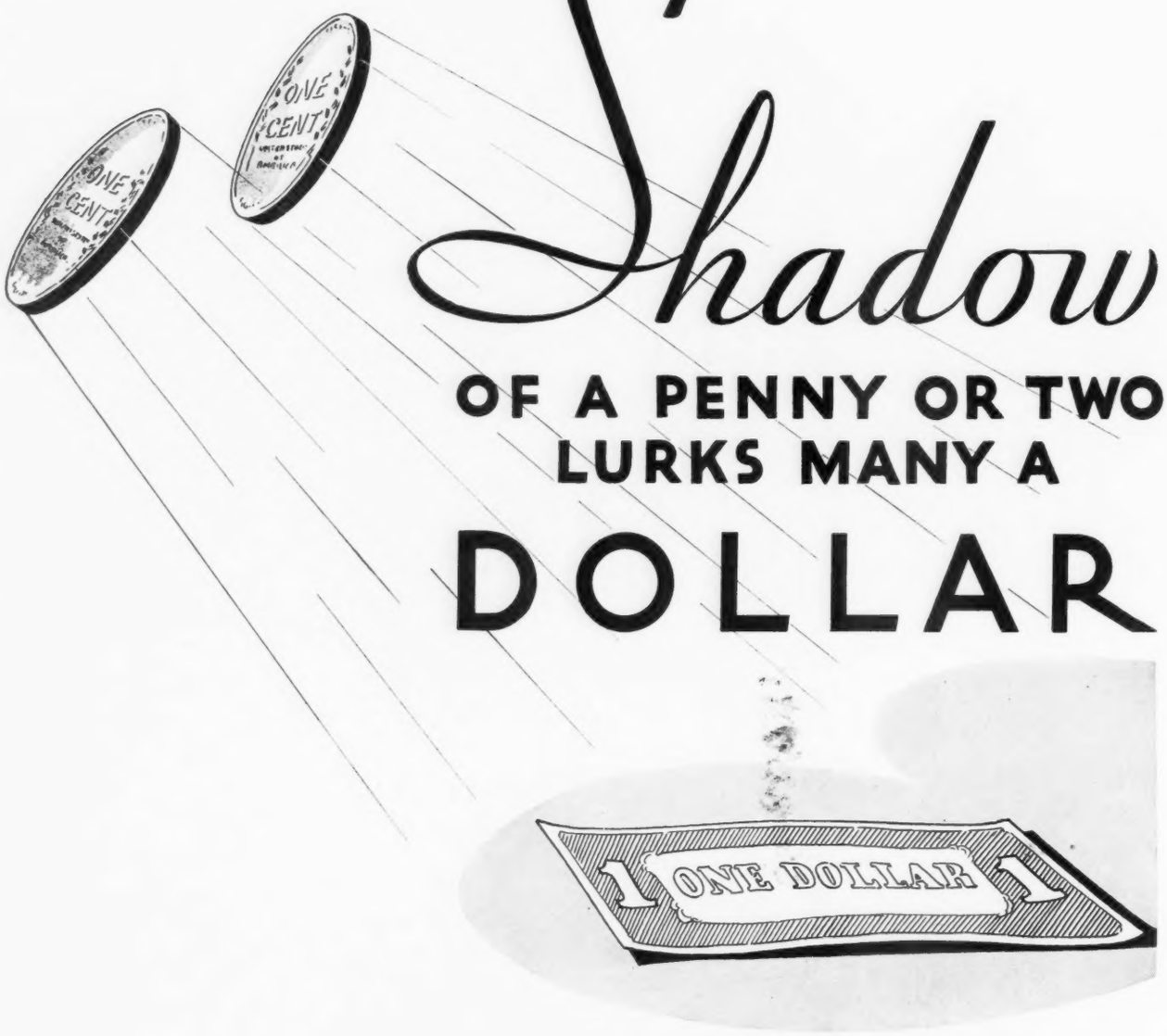

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Hosiery Code Approved, Effective September 4th; Underwear Ready

THE hosiery industry and the underwear industry, the former having been under a provisional code temporarily and the latter under the general terms of the cotton-textile code temporarily, presented in public hearings their final permanent codes of fair competition to the Industrial Recovery Administration on August 10th. In each case there were a number of important changes made in provisions and definitions, etc., and these will be commented upon here.

The hosiery code was approved and signed by President Roosevelt, and was made effective on September 4th.

It was expected that the underwear code would be approved essentially in the form in which it was finally submitted. There were a number of important changes made during the hearings in the code as it had been originally prepared for submission.

One change in the hosiery code was in the matter of minimum wages, and the differentials between northern and southern plants. The minimum rates under Article V as finally submitted will be found elsewhere on this page.

Taking up first the hosiery code, Articles I, II and III refer simply to definitions, purposes, and effective date of the code.

Article IV, covering hours of work, provided a schedule of hours not exceeding 40 hours per week, applying to employees except supervisors, foremen, engineers, electricians, repair shop men, dyers, shipping crews, watchmen, cleaners and outside crews. Office employees to work an average of 40 hours per week over a six-months period. Provisions for maximum hours and minimum wages to be worked out by January 1st for all groups of employees excepted under the provisions of the code.

"The productive operations of a plant shall not exceed two shifts of 40 hours each per week. The work-week for productive operations, except dyeing, shall not exceed 5 days of 8 hours each. These days shall be Monday to Friday inclusive, except in those states where the state laws operate to prevent the operation of two 40-hour shifts within the mentioned 5 days. In such states, the employer may operate one shift on Saturday, not to exceed 4 hours, it being definitely understood that his total machine hours shall not exceed 80 hours per week." This quotation is also from Article IV.

Article IV continued: "For a period of six months following the date on which this code goes into effect, full-fashioned hosiery plants whose footing equipment on July 24, 1933, was being operated on a two-shift basis may continue to operate such equipment on a two shift basis but the length of these shifts shall not exceed 35 hours per week. The rates paid to knitters, knitting-helpers, and toppers working on these 35-hour shifts shall be such as to provide them earnings equal to those which they would receive if working on 40-hour shifts. Full-fashioned hosiery mills whose footing equipment on July 24, 1933, was being operated on a one-shift basis shall not, during said six months, operate such equipment more than one shift of 40 hours per week. Not

Minimum Wages as Provided in Hosiery Code of Fair Competition

1. Full-Fashioned Manufacture

Classification of Workers		Minimum Weekly Rate North	Minimum Weekly Rate South
Class 1—Leggers—Footers	36 gauge and below	$18.50	$16.75
	39 gauge	20.00	18.00
	42 gauge	21.50	19.50
	45 gauge	23.50	21.25
	48 gauge	25.50	23.00
	51 gauge and above	27.50	24.75
Class 2—Boarders		17.00	15.50
Class 3—Toppers, Loopers, Seamers, Skein Winders, Menders, Pairers, Finished Inspectors, Helpers on Knitting (over six months training), Pairer-folders		15.00	13.50
Class 4—Stampers, Boxers, Gray Examiners, Folders, Cone-winders, other productive workers, learners (including machine helpers) for the second 3 months of their training		13.00	12.00
Class 5—Learners (including machine helpers) for the first 3 months of their training		8.00	8.00

2. Seamless Manufacture

Classification of Workers	Minimum Weekly Rate North	Minimum Weekly Rate South
Class 1—Machine Fixers	$18.00	$16.25
Class 2—Knitters (240 needle and above), Loopers (240 needle and above), Boarders	14.00	12.75
Class 3—Knitters (Below 240 needle), Loopers (Below 240 needle), Seamers, Toppers, Menders, Pairers, Welters, Trimmers, Stampers, Folders, Boxers, Inspectors, Winders, Knitters (ribbed top), Shipping Help, Machine Fixer Helpers, Other Productive Workers	$13.00	$12.00
Class 4—Learners (first 3 months training)	8.00	8.00

It is interpreted that the provisions for a minimum wage in this Code establish a guaranteed minimum rate of pay per hour of employment regardless of whether the employee's compensation is otherwise based on a time rate or upon a piecework performance. This is to avoid frustration of the purpose of the Code by changing from hour to piecework rules.

later than 30 days before the expiration of the mentioned 6 months, the Code Authority shall submit, for the Administrator's approval, a recommendation for determining a more permanent policy respecting footer operation designed to effect a reasonable balance between production and demand."

Manufacturers of woolen hosiery may operate their knitting equipment not to exceed three shifts of 40 hours each until December 31, 1933, after which time their knitting operations shall be limited to two shifts of 40 hours each. This exception applies only to the manufacture of hosiery which contains at least 20 per cent wool.

Under the code, the South as referred to in the rates, was defined to embrace Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia and West Virginia. A learner's first three months of training was defined as the aggregate of his or her first three months' training within the industry, whether continuous or not, whether employed by or permitted to work by or for one or more employers.

The wages received by knitter-helpers, it was subsequently interpreted, are to be paid in full by the employer, and the practice of permitting the knitter to pay part of such wages discontinued.

The production or task required by any worker in any class may not be more than what it was prior to July 1st—was another provision.

Article VI, on Conditions of work, provided that all productive operations shall be carried on on the premises of the plant, to prevent farming out of work, except in individual cases where it is proven the worker can only work at home; the elimination of minors in the hosiery industry under 16 years of age.

A section in the code under Article VI, suggesting a means of disposing of disputes within plants, by means of election or representatives by employees through secret ballot, was eliminated at the request of the hosiery union representatives. The manufacturers in doing this said they were willing to remove it from the code so long as the official record would clearly show that the responsibility for the failure to provide in the code a means for disposing of disputes rests squarely on the shoulders of labor.

Article VII provides for the making of various reports and supplying data to the National Association. This was covered in the comment on the preliminary code in the August issue of COTTON.

Article VIII on Fair Trade Practices was discussed in its original form in last month's issue, the following important provision having been added in the Article as submitted to the Administration:

"All full-fashioned hosiery, and all seamless hosiery selling at $2.25 or more per dozen pair, which is not first quality, shall be stamped or transferred either 'Irregulars' or 'Seconds' on the toe or sole of each hose, except that goods of a lower classification commonly known as thirds must be stamped or transferred 'Thirds.'

"No material or content shall be stamped on any hose unless it represents at least 5 per cent of the hose by weight. When two or more contents exist, if any content is stamped on the hose, all contents constituting 5 per cent or more of the weight of the hose shall be stamped and in the order of major content."

Article IX provided for the agencies of co-ordination and administration, but it was subsequently stated that the forms of the administrative body was changed, at the request of the administration, into a body to be known as the Code Authority, smaller in size than was originally provided for in the code, and including representatives of government, and also of labor to be appointed by the Labor Advisory Board.

Article X of the hosiery code is a reproduction of the provisions of Section No. 7 (sub-section a) of the National Industrial Recovery Act, mandatory in all codes.

William Meyer, president of the Apex Hosiery Mills, Philadelphia, is president, and Earl Constantine is managing director of the National Association of Hosiery Manufacturers, sponsors of the hosiery code, and, with a splendidly working committee covering the different branches of the industry, did yeoman service in the drafting and presentation of the code.

The Underwear Code

THE final draft of the code for the underwear and allied products manufacturing industry, as eventually submitted following last-minute changes in conference, will be discussed. It was sponsored by the Underwear Institute, 203 Union Trust Bldg., Washington, D. C., of which E. J. McMillan, of the Standard Knitting Mills, Knoxville, Tenn., is president, and Roy A. Cheney secretary.

Part I of the code defines the industry to include the manufacture of knitted, woven and all other types of underwear manufactured from all types of materials, with the exception of women's undergarments, pajamas and lingerie made from woven fabric of silk, rayon, cotton or flannelette, or of any combinations thereof, and also excepting women's, children's and infant's lingerie undergarments made in the Phillippines or Porto Rico from woven fabrics; (b) Garments made in underwear mills from fabric made on underwear machines excepting however, the cutting and fabricating of shirts other than undershirts (provided, however, that the manufacturer of fleece lined sweat shirts and other garments of like nature are not included in this exception and so are retained to this industry); (c) any and all fabrics sold or used mainly for underwear purposes made on flat, warp or circular knitting machines; (d) knitted elastic fabrics; (e) knitted tubing for meat bagging; (f) knitted fabrics for glove linings and wristlets; (g) knitted fabrics made for leggings; and (h) knitted wash cloths. It was provided that upon approval of a code for the infant's and children's wear industry, a manufacturer of infant's and children's underwear other than knitted cotton and woven cotton may elect not to be bound by the underwear code and file notice of such choice.

Productive machinery is defined to mean knit-

ting machines and/or sewing machines used in the industry. Learners are defined as persons with less than eight weeks of experience. "Privileged employees" are defined to mean those who by reason of proven physical or mental infirmity are not able to do the minimum amount of work usually done by employees in this classification of work; should be limited to 5 per cent.

Part II of the code covers Labor, and eliminates minors under 16 years of age, and the elimination of home work. Maximum hours for employees—except office and supervisory staff, repair shop crews, engineers, electricians, firemen, machine fixers, shipping, watching, cleaners and outside crews—are set at not more than 40 hours per week or eight hours in any one day. Repair shop crews, machine fixers, engineers, electricians and watching crews, except in emergency, are limited to 40 hours with a 10 per cent tolerance, and time and a half for overtime. Office employees are limited to an average of 40 hours a week over a period of six months.

There are "stretch-out" and maximum hours under one or more employers similar to those in the cotton-textile code as approved.

Minimum wage rates applying to all employees except learners, privileged employees, cleaners and outside crews, are set at $12 a week for the South and $13 a week for the North, or the hourly equivalent. Learners are to be put at the standard piece work rate, but in no event shall receive less than $8.00 per week.

Part II also provides that the amount of difference existing prior to the effective date between the various classes of employees receiving more than the minimum wage shall not be decreased; with no employee receiving less for 40 hours than for the previous longer week.

Cleaners, outside workers and privileged employees are not to exceed 8 per cent of the total employees; are to receive not less than 75 per cent of the minimum wage, and, when working on piece work, shall receive the standard piece work rate.

Part II contains the mandatory provisions of Section 7 (a) of the National Recovery Act.

Part III covers Machine Hours. Sewing machines may not be operated by any persons for more than one shift of 40 hours per week. Knitting machines may not be operated by any person for more than two shifts of 40 hours each per week.

Part IV covers the Administration of the code; calls for an industry committee, to co-operate with the administrator, with six representatives of the industry and three (without vote) appointed by President Roosevelt. Each manufacturer is required to furnish regular reports on wages and hours of labor; machinery data; production data, etc.; to register productive equipment—and the committee may recommend that the administrator require certification of new equipment except for replacement; to file promptly upon issuance all price lists, terms, etc., on his merchandise, and to advise the Institute of changes.

Part V covers the general provisions. It provides that no one shall manufacture or contract for the manufacturing of underwear and/or allied products made in penal or other institutions not conforming to the hours and standards of the code. All merchandise sold after the effective date and to be manufactured against such sales shall be plainly and visibly marked (by an indelible stamp or firmly sewn label) "sub-standard" where such merchandise comes below the minimum standards. Sizes or measurements shall be plainly marked. Merchandise manufactured prior to the adoption of a standard shall not be classified as "sub-standard."

A provision is made to permit increased costs of contracts to be adjusted, with the industry committee constituted as an agency to assist in effecting such adjustments.

Part VI, referring to unfair trade practices, is quoted below in full:

PART VI
Unfair Trade Practices.

"1. In order to prevent destructive price cutting, no person shall sell any merchandise at less than its 'reasonable cost' except as to defective goods known in the trade as 'irregulars,' 'imperfects' or 'seconds' which, when sold, shall be plainly so marked and invoiced, and except as to goods discontinued from the line of the respective person, and therefore no longer to be manufactured by such persons, sold at a discount price as 'close outs' and so designated in the sale and the invoicing thereof, provided, however, that the institute shall submit to the administrator, within six months after the effective date of this code, a plan for regulating the disposal of distress merchandise in a way to secure the protection of the owners and to promote sound and stable conditions in the industry.

"The Industry Committee shall, subject to the approval of the administrator, define 'reasonable cost' for the purpose of this code and determine upon a basis to be uniform among the persons of this industry as to the character of the terms to be included in such 'reasonable costs.'

"2. Standard terms shall be 2/10 E.O.M. net 60 days, invoices on and after the 25th of the month shall be dated as of the first of the following month. Maximum rate of anticipation shall be 6 per cent per annum. Closer terms shall not be prohibited. The building up of prices to take care of greater discounts than 2 per cent shall be prohibited. The effective date of these terms shall be the effective date of this code except as to shipments against orders booked before the effective date of this code.

"3. No person shall affix to any merchandise, or to the packaging thereof, fictitious resale price tickets, or other resale price indications, which may make it appear to the buying public that the actual resale price charged by the ultimate seller is lower than the supposed standard as indicated by such fictitious resale price indications. No person shall sell on consignment basis directly or indirectly, not to grant rebates to any customer, or enter into any secret selling conditions with any customer. Not to allow the equivalent of secret rebates or secret discounts in the way of advertising or other allowances. Not to accept and pay for, or make credit allowance, for goods returned for other causes than fault or error of the seller.

"Regular numbers, i. e., 'Firsts' shall not be marked 'Seconds,' or so sold. Misrepresentation or misbranding of merchandise is an unfair trade practice. No person shall enter into any form of special remuneration of clerks of a customer to encourage such clerks to push the sale of member's merchandise to the detriment of competitors. No person shall enter into any false or misleading advertising. No person shall imitate the trademarks, trade names, and/or trade slogans of competitors."

The textile industry is forever and constantly searching for men with brains, men who are trying to improve, men who are of good character. Do you qualify under this heading? If not, you'd better take stock of yourself and find out the reason why. Do you remember that OLD TIMER *article about "Know Yourself?"*

* * *

Have you ever thought what a blessing your mistakes have been to you? That sounds rather foolish, doesn't it? But it is a fact that we gain much valuable experience from our mistakes, especially if we remember them as we should when the same condition arises again. If everything an overseer or a superintendent attempted to do turned out to be a success—well, he would not be doing many things, because he would not have that foundation we call experience.

Eliminating Troubles in Knitting Caused by Knots in Yarns

Also a description of how a weaver's knot should be tied . . . . . .

EDITOR COTTON:

Knot trouble, such as cutting holes in fabric on knitting machines, has always been and always will be a problem to contend with in every mill. These knots, more troublesome probably in cotton, durene and lisle yarns, are the cause of a large percentage of imperfects, in mills using yarns of this kind for knitting purposes.

I have as yet to find, after many years of experience on knitting machines, a solution for preventing these knots, and I believe that every mill has the same problem. There are, however, certain practices in the mill which, if followed, will help to keep the percentage of cut-outs to a minimum.

The first requirement is to buy yarn from companies known to be reliable and consistent as to the quality of their yarns. The writer has in mind two yarn companies nationally known in the knitting trade. Our mill has bought yarns from both of these companies, with the experience of one supplying a satisfactory product and the other an unsatisfactory one. Comparing the yarns from both companies, the satisfactory one had knots, of course, but these knots were carefully tied by the winders. The knots were small, for the particular count, and the surplus ends were cut away evenly. The yarn was smooth, and had the required elasticity, a very important requirement for knitting purposes.

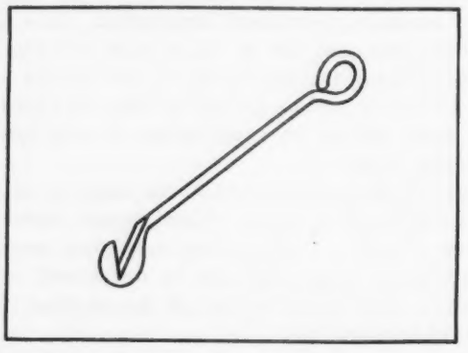
The yarn from the unsatisfactory company was almost the reverse of these conditions, and those who handle yarn on knitting machines know what I mean.

However, we cannot always get perfect yarn, so it remains to adjust the knitting machines to the best possible adjustments in order to get the best results.

Using the proper yarns for a particular gauge of machine is an important requirement, and one much neglected in many mills. Yarn of the improper size is the source of many cut-outs from knots. Yarn too heavy for the gauge of machine means larger knots, with more chance of cut-outs. It has been my experience, for example on Scott & Williams machines where the welts and boots of hose are knit too loose, a knot will almost always cut a hole, especially if cotton or durene yarns are being used.

By making sure that the knitting cams, such as stitch cams, side cams and sinker cap, are set properly, and that the yarn tensions are not too tight, so that the strain will not be too great when a knot hits the head of a needle during the knitting action—improvement will result.

We rewind a large percentage of our waste in our mill, so our winders are careful in tying knots properly. For the purpose of cutting the ends, after the knot has been tied, we have an effective and simple cutter which the operative uses. This cutter is made



of ⅛-inch steel wire bent to shape and ground as shown in the illustration. The operator brings the ends down over this cutter and bears downward, cutting the ends off.

Knitting machines having stop motions are generally equipped with yarn guides, having knot and sub protectors. These guides, having small holes through which the yarns run, stop the machine the moment a large knot or slub runs through, due to the stop motion action. These protectors are generally effective and are a worthwhile part of the machine. However, due to changing of styles from time to time, using different yarns on the machine, they should be turned to the proper size hole for the yarn being used. This, however, is a much neglected point, due to the change of adjustment not being made by the fixer at the time the change is made, resulting in knots and slubs going on through to the needles, and holes.

And then, many knot holes can be prevented at the time the operator ties the knot. Our practice is that after the knot has been tied, the machine is turned by hand until the knot passes into the needles for two revolutions of the cylinder before running the machine by power. This helps to prevent the tied knot from cutting a hole.

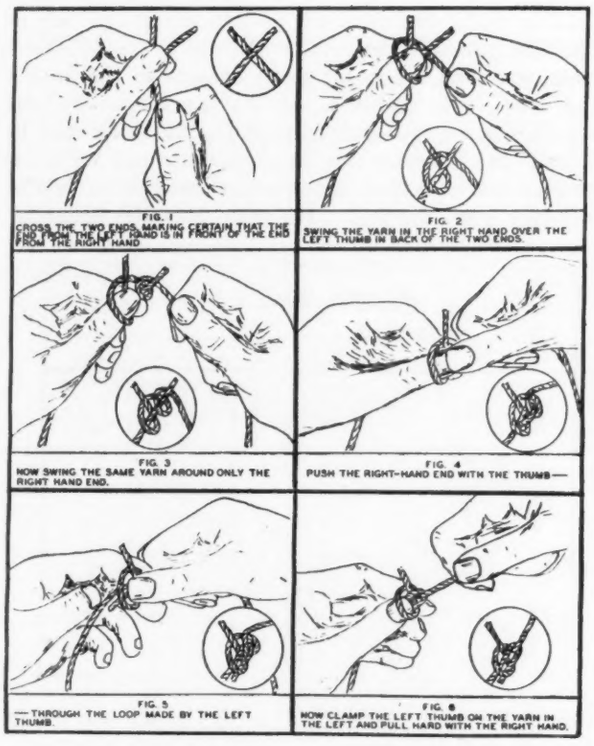


FIG. 1
CROSS THE TWO ENDS, MAKING CERTAIN THAT THE END FROM THE LEFT HAND IS IN FRONT OF THE END FROM THE RIGHT HAND
FIG. 2
SWING THE YARN IN THE RIGHT HAND OVER THE LEFT THUMB IN BACK OF THE TWO ENDS.
FIG. 3
NOW SWING THE SAME YARN AROUND ONLY THE RIGHT HAND END.
FIG. 4
PUSH THE RIGHT-HAND END WITH THE THUMB—
FIG. 5
—THROUGH THE LOOP MADE BY THE LEFT THUMB.
FIG. 6
NOW CLAMP THE LEFT THUMB ON THE YARN IN THE LEFT AND PULL HARD WITH THE RIGHT HAND.

Method of tying a weaver's knot

The practice on all of our rib knit machines is to twist the two ends together by hand, instead of tying a knot, turning the machine carefully by hand until the twisted ends are into the needles, before starting by power.

The method by which we tie our weaver's knots is shown in the accompanying set of illustrations.

CONTRIBUTOR NO. 6067.

Advice About Looper Course

EDITOR COTTON:

"CONTRIBUTOR NO. 6239" asks if it is advisable to make a looper's course of looser stitch on seamless knitting machines, so as to enable the operator to find the proper course and stitches more readily; or, on the other hand, whether it is better to make no difference in the stitch from the beginning of the toe to the end of the looper's round. He further asks, if such a course of looser stitch is made, where the fabric goes onto the looper, are holes more apt to develop at this place. The machines which he is using are 176-needle half-hose machines.

The contributor asking this question does not state what make of machine he is using, but I assume that it is either Banner or Scott & Williams.

I believe that a loose course should be made, on hose of this type. As these machines are equipped with loose course cams, and easily adjusted for this purpose, the advantages are many, both from the standpoint of more production turned out by the looopers, also the fatigue element on the looper's part, which would be greater if no loose course were in the fabric.

The writer, having had years of experience on machines of this type, fails to see why holes would develop in a loose course if a loose course were made in this type of machine. Naturally we must take into consideration the type of yarn being used, also the courses per inch in the fabric has its relation to possible trouble.

The proper yarns used, the proper courses per inch, and a loose course made which is not too large, should work out nicely on machines of this gauge.

When you take into consideration that a looper sits in front of her machine all day long looking at nothing but points on the looper, it is tiresome on her part to continuously guess at the proper course to follow on each sock. If the machines are mechanically perfect for making this loose course, why not give the looper a break?

CONTRIBUTOR NO. 6262.

Reducing Accumulation of Odds in the Finishing Department

A simple system, for both ingrain and dip-dyed work, of controlling this problem . . . . . .

EDITOR COTTON:

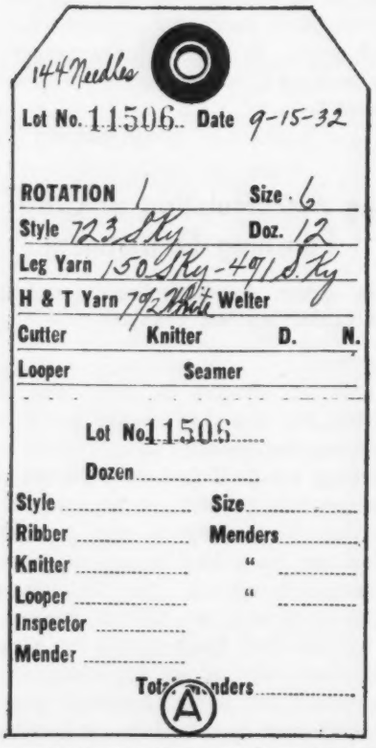
I am going to discuss in detail the question of "CONTRIBUTOR NO. 6140" in regard to the system we use in reducing the quantity of odds that accumulate in the finishing room. I feel as if I were well qualified to discuss this subject, as we make a large variety of styles, both dip-dyed and ingrain, and for many orders we have had to assort four colors of three styles to a dozen box. Any finishing room man will readily see that if we did not have a good and thorough system that there would be no end to the accumulating of odds in the finishing room. I consider this one of the most important problems that a hosiery mill man has to face, and with times as they are, it is more important than ever as odds now sell for about half the regular price when sold as odds or over-runs. Under present conditions, the only way a fancy mill can show a profit is to make what they sell and not try to sell what they make.

In order to keep down the accumulation of odds the knitting room must knit against order—no more and no less. The greatest help in keeping the odds down to a minimum is a thorough knowledge of how the work will run before the order is given the knitting room. Some styles will run very good, while other styles will not run so good, and it is this condition that makes it necessary to allow more for seconds, etc., in some styles than in others. We have a mercerized style that we allow only 5 per cent for bad work, while we have a rayon style on which we have to allow about 15 per cent. Some mills give the orders to the knitting room and let some one in that department add the necessary amount for bad work. However, we believe that it is better to have the finishing room man do this, as he, more than anyone else, is familiar with how the styles run.

First, I am going to discuss the way in which we handle our ingrain work, as this type of work requires a better system than does the dip-dyed. After combining several orders, or perhaps one large order, and deducting what odds he may have in the

finishing room, and adding the necessary percentage to allow for bad work, the finishing room man gives the order to the knitting room. In this order he gives the style and number of dozens of each size and color he wants.

The knitting room boy, when he receives this order, gives the dye house an order for the necessary quantity of dyed yarn. As we dye all of our own yarn it is not necessary to order the yarn from the office as the yarn that is ordered one day is dyed that


144 Needles

Lot No. 11506 Date 9-15-32

ROTATION 1 Size 6

Style 723 Sky Doz. 12

Leg Yarn 150 Sky-491 Sky

H & T Yarn 7½ White Welter

Cutter Knitter D. N.

Looper Seamer

Lot No 11506

Dozen

Style Size

Ribber Menders

Knitter "

Looper "

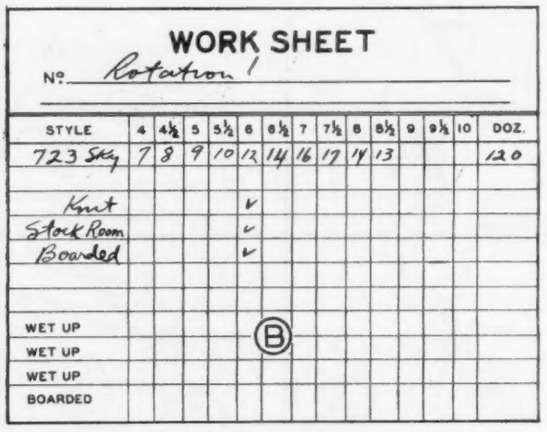
Inspector

Mender

Totals Menders

A

day and is ready to run the next day. He then makes out the knitting orders *A* that also serve as tickets that go on the bags of work. This ticket gives all the necessary information, style, size, number of dozens, construction and rotation number. When making out the knitting orders he makes out a work sheet or rotation sheet *B*, which he numbers, for each color. This number is the same as the one appearing on the knitting ticket. This sheet shows the number of dozens of each size to be made. He then turns these knitting tickets over to the head of the knitting department, who starts them at the proper machine and gives the rotation sheets to the woman who keeps the record of the work after it is knit and as each bag is turned in she checks it off the rotation sheet, so we are able to tell how each order stands at all times. When all of the rotation sheets are completed she then turns them over to the man in the ingrain stock room. When he receives all of the bags on each rotation he then takes the entire run to the boarding room and also turns the rotation sheets over to him. He then has the complete run wet-out and boarded. He has every sack boarded, as a few years ago the boarders did not board less than half a dozen and they would leave these in the end of the trough. When they finally boarded these the finishing room man would get a lot of odds that he could not work up. When the entire run is boarded he sends the rotation sheets to the finishing room man and the goods are also sent to the finishing room to be finished. By having the entire run together one of the problems of the finishing man is solved, for he does not have to stop and hunt up several lots and then have one lot come in after the run has been finished. He then puts the order or


WORK SHEET

No. Rotation 1

STYLE	4	4½	5	5½	6	6½	7	7½	8	8½	9	9½	10	DOZ.
723 Sky	7	8	9	10	12	14	16	17	14	13				120
Knit					✓									
Stock Room					✓									
Boarded					✓									
WET UP						B								
WET UP														
WET UP														
BOARDED														

orders through, putting them up in the necessary manner and packing. If for some reason a lot runs worse than he expected, he gives out a "short" order to the knitting room, which is put right through ahead of the regular orders. The overs or odds are counted and are put away where they will not get dirty or faded, so they can be deducted from the next order that is put through for this style.

As you already see, the success of this system depends largely on the finishing room man in allowing the right amount for seconds, etc., and also in keeping a record of his overs or odds and deducting them from the next run.

We handle our dip-dyed numbers in very much the same manner, except that the knitting room gets their orders from the gray stock man instead of the finishing room man. The finishing room man makes up his dye runs the same way he makes up the knitting orders for the ingrain work. The gray stock man never drops a lot into the dyehouse until he is sure that he can get the entire run up. After the goods are dyed the same system is used as in the ingrain work.

When this system is followed we are never troubled with many odds that we are unable to work off, and even if we do not make any more of any particular style we have only a few dozen left in the finishing room.

Our methods may not be the best, but I hope that in the foregoing description "CONTRIBUTOR NO. 6140" will find some suggestions that will help him in reducing the odds that are accumulating in his finishing room.

CONTRIBUTOR NO. 6153.

An organization of overseers goes forward mainly through each of us trying to do the very best that is in us, for our own department first, then by exerting an unselfish, honest effort to help the other departments.

Method for Making Patterns on Spiral Float Machines.

EDITOR COTTON:

This answers one of your contributors, who asked for a method of laying out a new pattern on Model K spiral float machines.

In designing patterns to be made on spiral float machines, one should first have abundant material in the way of designs of cross-stitch work, embroidery patterns, etc., that may be obtained from needle work manuals and magazines that describe this sort of fancy work. By having plenty of such material, one is greatly helped by the suggestions that it offers.

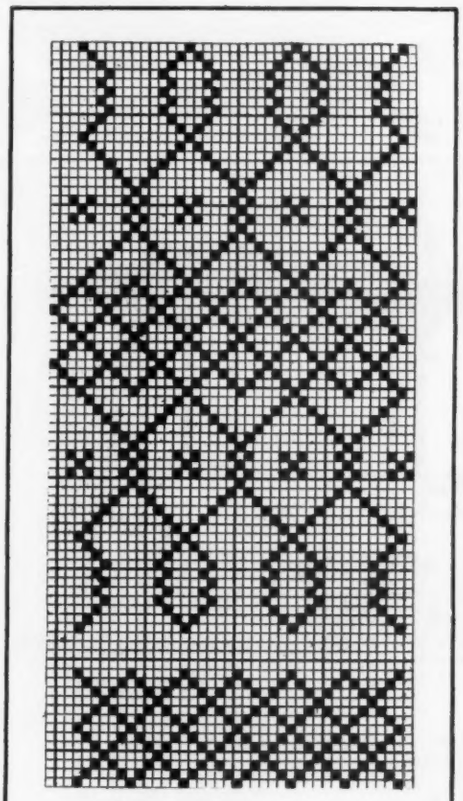


FIG. 1

The next step is to take a sheet of engineer's section paper ruled in squares of 1/20-inch and sketch the design in these squares as represented in Fig. 1. By this means one gets a very true proportion in the design.

After having drawn the design as shown in Fig. 1, proceed to analyze it, finding out the fundamental lines which go to make it up. These are found to be, in their simplest form, those indicated by *a* and *b* in Fig. 2.

Next, make a list of the number of each kind of jack. Place seven empty spiral jack boxes in a row, counting out 29 jacks in each of the end boxes and 58 in each of the other five boxes. These spiral jacks are then cut to agree with the lay-out, *a*, *b* and *c*. In a 360-needle top there will be:

29 jacks with the *G I Y Z* left on
58 *F J*
58 *E K Y Z*
58 *D L*
58 *C K Y Z*
58 *B J*
29 *A I Y Z*

This will leave twelve jacks, which should be left plain with the exception that each alternate one should have the nibs *Y* and *Z* left on for the purpose of making the make-up, run stop, etc.

After the jacks are cut, beginning with the left box, take one jack from each box and arrange them according to the lay-out in *a*, *b* and *c*, Fig. 2.

The next step is arranging the drum jacks as shown in lay-out *d*, Fig. 2. It will be noticed that this lay-out is in reverse, so in placing the drum jacks in the drum, they will be placed in reverse order from that indicated. By analyzing the drum jack lay-out in connection with the spiral jack lay-out, one will be able to see why they were so arranged.

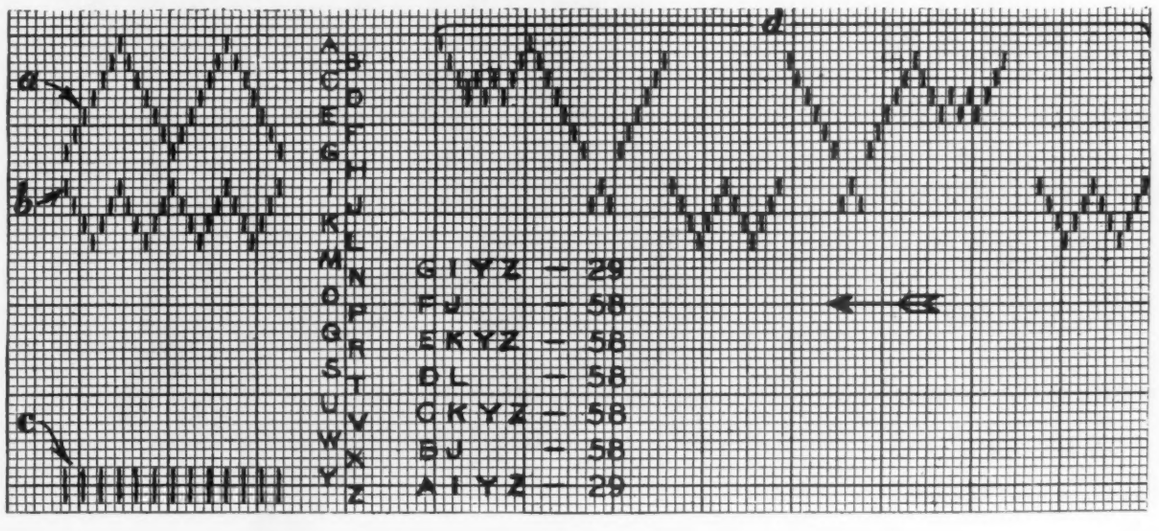


FIG. 2

Like a fine motor-car..

Each unit is assembled

and tested

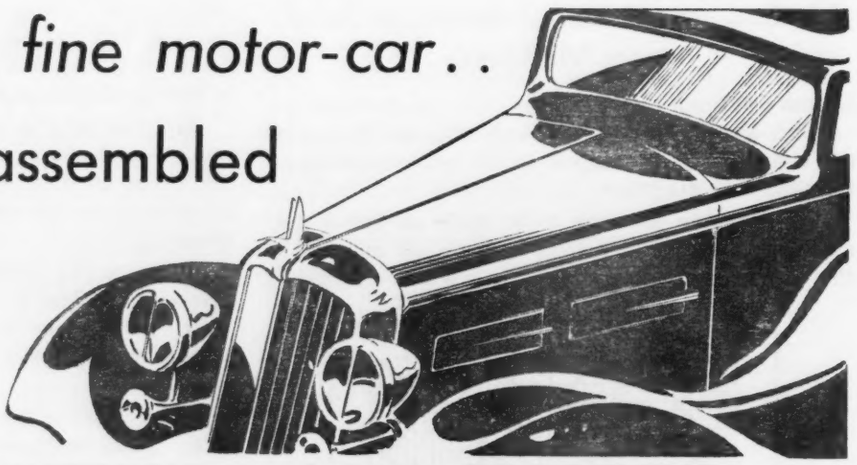
•

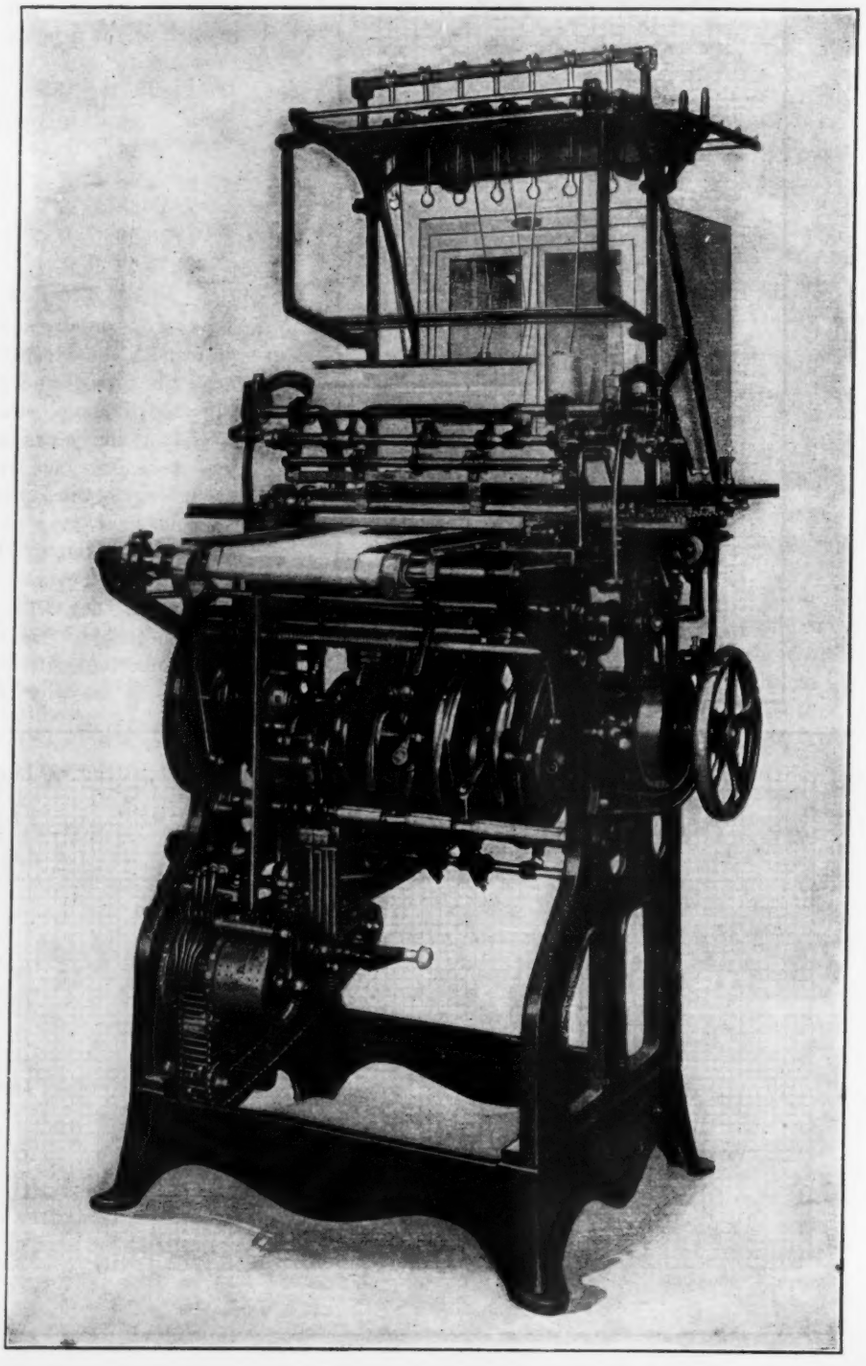
YOU CAN

PUT IT INTO

OPERATION

AT ONCE!





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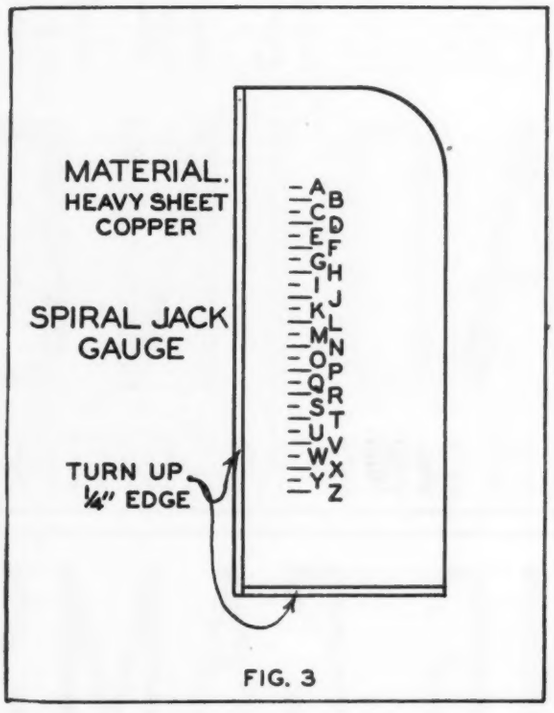


FIG. 3

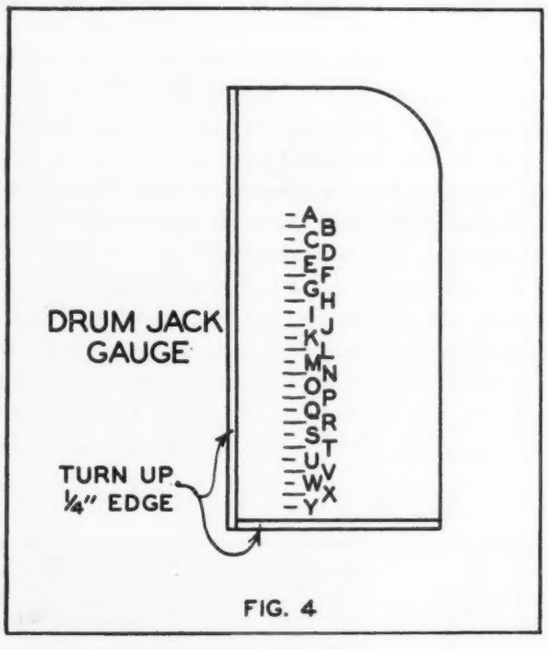


FIG. 4

It will be evident that many other designs may be made from this spiral jack lay-out by different arrangements of the drum jacks.

It is desirable to be able to identify quickly these spiral jacks. This I have done with the aid of the gauge shown in Fig. 3, which is made of sheet copper with the edges turned up at *A* and *B*. With this gauge, worn-out jacks may be identified readily so that new ones may be made. Fig. 4 shows the same idea for use with the drum jacks.

Fig. 5 represents a case of receptacles lettered from *A* to *Y* for assorting the unused jacks. In making this case a piece of tin is fastened into each receptacle as shown in Fig. 6, so that the last jacks may be picked out more easily. This case of receptacles is

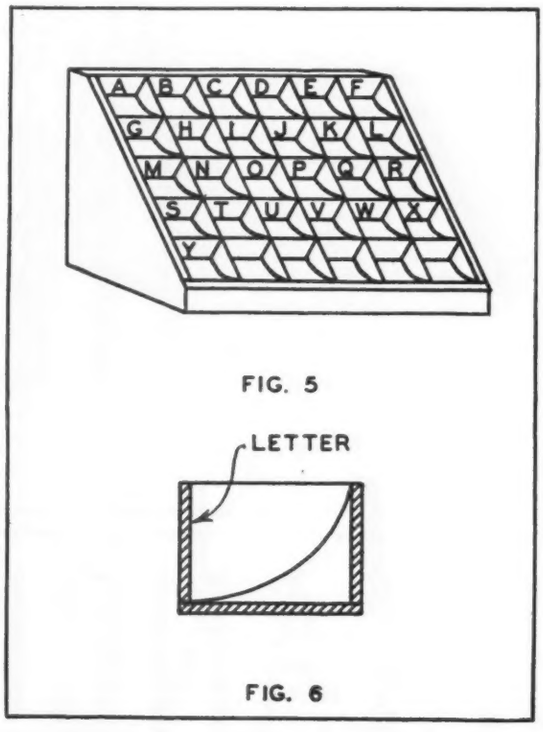


FIG. 5

FIG. 6

intended only for sorting the drum jacks which in practically all cases have only one nib on each jack cut off and therefore may be easily sorted according to their alphabetical value. The spiral jacks, having an almost infinite variety of combinations, cannot thus be sorted, but are filed away in their natural order. In certain styles, more than one nib is cut off the drum jacks, and in these cases no attempt is made to sort them, but they may be tied up in their natural order and labeled with the style they represent.

CONTRIBUTOR No. 6134.

Do Your Transfer Knitters Do Their Own Topping?

This mill wants your opinion and experience on whether to have separate hands do the topping. Let us hear from you . . . . . .

EDITOR COTTON:

We would be glad to have the opinion and experience of some of your readers regarding the desirability of having an operator on transfer seamless knitting machines do her own topping and giving her a larger number of machines, or having the topping done by other girls behind the machine.

We are making half-hose fancies on 176-needle machines, and are interested in learning something of the experience of other mills in this connction. The main questions are:

Which system is productive of better results as far as production and quality are concerned?

Does the operator become as expert if she has to do her own topping?

How many machines should an average knitter operate on 176-needle machines, on each method?

CONTRIBUTOR No. 6261.

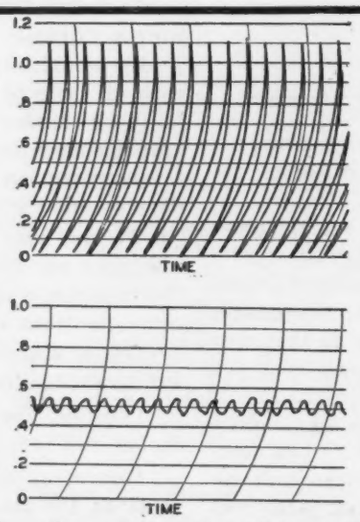
IMPROVEMENTS IN THE READING FULL FASHIONED KNITTING MACHINE BALANCING CAMS

Uniform machine speed means a more uniform fabric. The elimination of intermittent heavy and light loads means added life to the motor. To minimize the uneven rotational speed of the Camshaft and to equalize the torque on the Camshaft during the knitting cycle, Textile Machine Works presents a new development—"Balancing" Cams (U. S. Patent Pending)—designed and built exclusively for use on READING Full Fashioned Knitting Machines . . . Just what Balancing Cams mean to the operation of the machine is graphically shown by a comparison of the power curves reproduced below: The power curve (a) taken from the machine without Balancing Cams fluctuates from 0 to 1.1 while the curve (b) taken after Balancing Cams have been added shows a fluctuation of from 0.45 to 0.54, or less than one-twelfth of curve (a). ¶ Write us for further particulars.

TEXTILE MACHINE WORKS, READING, PA.

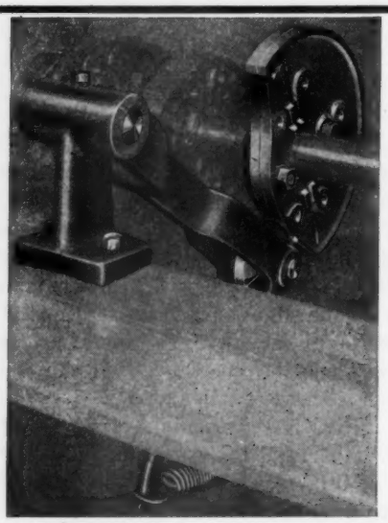
(a) Without Balancing Cams

(b) With Balancing Cams



Since the Camshaft speed is directly proportional to the power consumed at any instant, these curves indicate that without Balancing Cams the Camshaft rotates at a very uneven speed; but with Balancing Cams the Camshaft speed very nearly approaches uniformity . . . And a uniform machine speed means a more uniform fabric.

Power Curves showing effect of Balancing Cams



Balancing Cam as seen from rear of machine

The Care and Operation of the Banner Split-Foot Machine.

Article Four

(This article is the fourth in a series of discussions on "The Care and Operation of the Banner Split-Foot Machine." The author started the series in the first article on page 89 of the April issue. The second article was on page 89 of the May issue, and covered sinker cam adjustments. The third article covering the carrier ring, yarn levers, cam block, center guard cam, etc., was on page 93 of the July issue. Later articles will take up other parts of this machine for practical discussion. Then it is planned to discuss other types of Banner equipment.

Readers are urged to clip these discussions in order that they may have a complete file of these articles. Copies of the first and second installments will be furnished upon request. The author is willing to answer any specific inquiries concerning these machines.

The numbers appearing in parentheses following the names of parts are those used in the manufacturers' blue print book which is furnished to operators of the split-foot machine.— The Editor.)

EDITOR COTTON:

Down through the years, Banner machines have always lived up to their reputation of producing hosiery with pronounced elasticity, smooth appearance, and freedom, to a marked degree, from streaks. There are reasons for this valuable reputation to be sure. To begin with, the machine as a whole must be well designed, accurately built, and kept in a good state of repair. Needles and sinkers made absolutely uniform as only especially designed machines can make them must be used. Over and above all of this there still remains one vital requirement, to make possible the production of outstanding hosiery: a good needle cylinder. Banner cylinders are known for their long life, and for being made within very small tolerances either way. Much depends on how well they are cared for; as to whether they are used or abused.

Illustration No. 14 in the Banner blue print book shows the needle cylinder, the stitch ring (61), cylinder band (8016) and sinker holder ring (3181). It is obvious that all of the foregoing parts must be kept in first class condition if one expects a machine to product high class merchandise.

The Stitch Ring

Constant running, especially on all cotton goods, causes an accumulation of cotton fiber or lint which becomes packed in the slots of the stitch ring, around the sinker holder ring, also between and under the sinkers. Oil and grit are absorbed by the packed fiber, which, if not removed in due time, will prevent the sinkers from working freely, causing streaky fabric in extreme cases. Dirty heel and toe gores and dirty lines across the instep can be reduced if the stitch rings are kept clean. This is especially desirable when light shades of ingrain goods are being made. It will also help reduce redyes on goods knit in the grey that must be dyed in lighter shades. At times needle and sinker breakage will bend the stitch ring walls and make the sinkers bind; this will cause streaks to show up running vertically through the sock or stocking. Some of these streaks have a tight, ribbon-like appearance, others will show up loose as though the wales were knit irregularly. Stitch rings, like other machine parts, are bound to wear out through constant use. They should be replaced when badly worn. Very often machine fixers will lay the blame of streaky fabric on the cylinder, on various cams, needles, sinkers, etc., and never stop to think that the stitch ring has perhaps paid for itself many times over through long and faithful service.

Replacing a worn stitch ring is not a difficult task, however, this work must be done carefully, making sure to remove all old solder from the top of the cylinder and cleaning it thoroughly. The stitch ring must be located in proper relation to the cylinder walls and rest perfectly on the top surface of the cylinder. An excessive amount of solder is not necessary in fastening the stitch ring to the cylinder, merely enough to hold it securely, and that evenly distributed.

Occasionally stitch rings will break loose from the cylinder, usually about half of the ring will get loose permitting lint and grit to get between the stitch ring and the cylinder which causes it to rest unevenly on the top of the cylinder. This makes the machine knit the fabric longer on one side than the other, causing what most fixers call a crooked sock or stocking. The only remedy is to remove the stitch ring completely and re-set it.

The Sinker Holder Ring

The sinker holder ring requires very little attention. As already stated, it should be kept free from packed lint, otherwise it cannot do its duty. In time sinker holder rings will become cut up by the sinkers; they should be replaced promptly to avoid further trouble.

The Cylinder Bands

Cylinder bands as a rule do not receive the attention they deserve. It must be kept in mind that the needles will eventually cut slots in the bands and in time the bands will lose their flexing quality. The cost of cylinder bands is low when measured by the amount of service they give. They should be inspected regularly and renewed when they become cut up by the needles. The groove or recess in the cylinder which keeps the bands in position should be kept clean at all times.

In many cases cylinder bands are permitted to run for months without any attention whatever. It is not difficult to understand why the cylinder bands must be kept in good condition. In knitting on any type of circular machine, much depends on how well the needles are controlled and the cylinder bands, though inconspicuous and often neglected, have an important duty to perform.

The Needle Cylinder

The needle cylinder (3600) shown on Illustration No. 14 in the Banner blue print book is for the new model machine. The main difference between this cylinder and the cylinder used on the old model split-foot machine is that all cylinders on the new machines are slotted the full length of the cylinder in order to accommodate jacks. The use of jacks makes

possible the many refinements, which have made the new split foot machine so popular. These new features will be discussed in detail at a later date.

In the beginning of this article it was stated that Banner machines have always been known for their tough, service-giving and accurately made cylinders. If there is any one particular part on a circular knitting machine of any type that *must never be abused* it is the cylinder. Gears, shafts, bushings and various kinds of cams will all stand a certain amount of abuse, lack of attention or whatever one may choose to call it, and still retain their usefulness toward producing good merchandise. The cylinder, however, presents an entirely different problem. True, Banner cylinders will stand a lot of hard usage due to their rugged construction, and still produce good work; however, good hosiery cannot be knit on a cylinder which has constantly been abused.

Now, some reader may ask, just what is needle cylinder abuse? I will attempt to answer this question by jotting down a few Don'ts in connection with the proper care of the cylinder.

Don't run the cylinder more turns per minute than recommended by the machine builder.

Don't forget that the cylinder needs to be lubricated regularly and thoroughly at least once a day with a good grade of oil.

Don't increase needle friction by excessive bending. Use needles as they come from the needle maker; machines can bend needles more accurately than human hands.

Don't force the blade of a screwdriver between bent cylinder walls and attempt to straighten them by prying. The better way is to place a needle butt against the bent wall and drive it back gently with the assistance of a small hammer and an old screwdriver. For short, sharp bends, proceed as above, but place a piece of an old hack saw blade or preferably a piece of steel just thick enough to fit between the walls, behind the bent place, and then drive it back. This method will prevent driving back too far and thus bending the wall in the opposite direction; it is also helpful in making a foundation to drive against.

Don't guess when adjusting cams or parts which have anything to do with needle control or which if improperly set may damage the cylinder walls.

Don't be too liberal with the use of a slot file when it becomes necessary to smoothen up some rough places caused by broken needles or other machine trouble. As a rule cylinder walls become scarred or rough only near the outer edge, therefore a lot of unnecessary filing down to the full depth of the wall is harmful as it will roughen the inner surface of the walls and cause the needles to bind.

Don't make the inexcusable mistake of forcing a cylinder to turn by jerking the handle when for some reason the needles get stuck in the cam races.

Don't forget that it pays to remove the cylinder dismantle it, and clean it thoroughly at least twice each year.

Some of the Don'ts which have been listed not only have been done, but are still being done, not by the successful fixer, but usually by the boy who is learning or frequently by the fixer who spends most of his time dodging the boss, waiting for the whistle and payday.

The Narrowing Picks

The narrowing picks (566-567) are shown on Illustration No. 15 in the Banner blue print book. A great deal of improvement has been made in the manner of adjusting the picks over the old model machine. It is a simple matter to set the pick at the correct height so that the needle butt will be sure to pass above the lip of the stick. The narrowing pick brackets (564-565) are adjustable so that the end of the pick can be set the desired distance from the cylinder easily and quickly. On the old type machine it was usually necessary to grind picks to get the proper length. In many instances picks had to be bent upward or downward to make them work satisfactorily. All of this has been eliminated by means of a few simple adjustments. Very often fixers get into trouble by putting too much tension on the narrowing pick springs. Merely enough tension on the spring is needed to hold it steady in the low position and bring it down after the needle has been raised. The lip of the narrowing pick should be just wide enough to hold one needle. Bent or damaged cylinder walls usually bring on narrowing pick troubles.

The Widening Picks

The widening picks are shown on Illustration No. 14 in the blue print book. Ample adjustment facilities are provided so that the picks can be raised or lowered, moved toward the cylinder or away from it as the case may be. Be sure that the lip of the widening pick will cover two needles and one wall. Also see that the picks are high enough so that the needle butts will pass just under the lip of the stick. Widening picks give very little trouble once they are properly adjusted. Bent or rough cylinder walls, bent needle butts, needles with excessive friction, too little or too much tension on the narrowing pick spring—these are but a few of the minor things which may cause narrowing pick troubles, through no fault of the pick itself. Many fixers spend a great deal of time grinding widening picks and narrowing picks. Some grinding or polishing is necessary when fitting up new picks but on picks which have been working satisfactorily, and suddenly give trouble, it would appear that adjusting rather than grinding would be in order. Both narrowing and widening picks should be lubricated regularly.

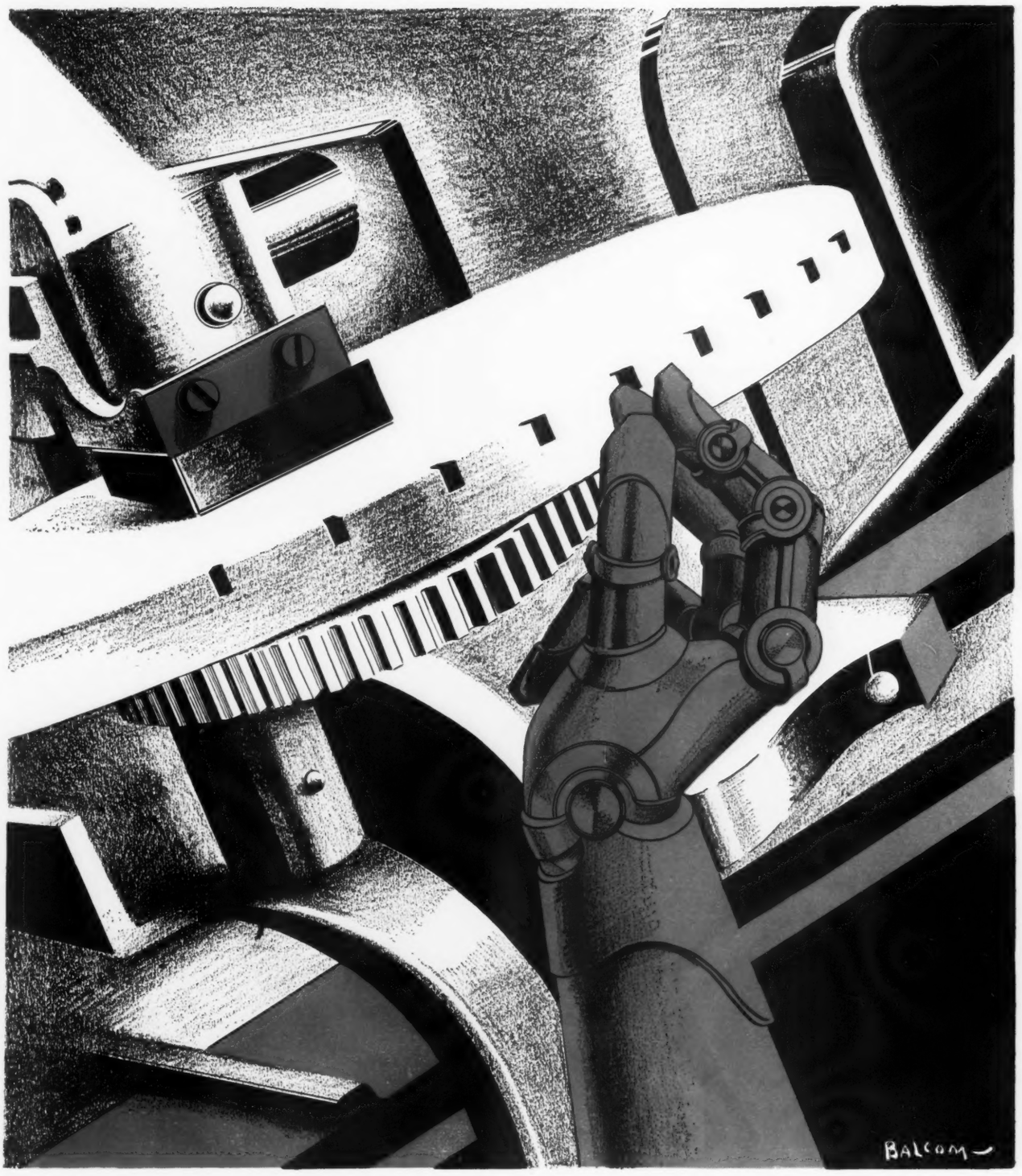
What has been said in this discussion will apply to the old model split foot as well as the new model.

CONTRIBUTOR No. 6206.

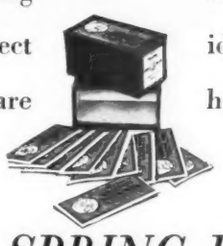
The master key to that bigger job, to health and prosperity, is to be master of yourself. Darn few people are.

* * *

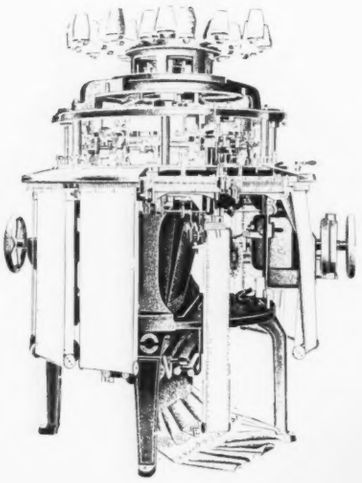
There are very few people who really know what it is possible for a human being to accomplish. Why not fool yourself by trying real hard to prepare yourself for promotion?



To think of accuracy and exactness is to think of *machinery* . . . unerring, untiring wheels and levers that are never subject to human moods. Torrington needles are produced by machines . . . and they are therefore *accurate* and *exact*. Each one is identical with the others . . . in a box or a hundred boxes.



TORRINGTON *SPRING BEARD* NEEDLES



THE MACHINE

Another example of the "good company" which Torrington needles can claim . . . this Circular Links and Links machine, built by Jacquard Knitting Machine Company. A machine can do its best only if its parts are the best. *Torringtons* are an important part.

THE PRODUCT

Active in the field of sportwear sales, is this Jacquard design bathing suit by Travelo. Its success is due to a combination of things . . . good styling, good material, good machines, good (Torrington) needles!

AND TORRINGTON NEEDLES

There are many reasons for specifying Torrington needles. And not the least of these is the fact that an ever-increasing number of machine builders and knitters standardize on Torringtons, because they are uniformly dependable.

The Torrington Company

ESTABLISHED 1866

Torrington, Conn., U.S.A.

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THE TORRINGTON COMPANY,	1640 FAIRMOUNT AVE.,	PHILADELPHIA
THE TORRINGTON CO., INC.,	140-144 W. 22ND STREET,	NEW YORK, N. Y.
THE TORRINGTON COMPANY,	538 SOUTH WELLS ST.	CHICAGO, ILLINOIS
THE S. M. SUPPLIES CO.	210 SOUTH STREET,	BOSTON, MASS.
LOS FABRICANTES UNIDOS.	964 CALLE BELGRANO.	BUENOS AIRES

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TORRINGTON, CONN. • UPPER BEDFORD, QUEBEC
COVENTRY, ENGLAND • AACHEN, GERMANY

TORRINGTON *Latch* NEEDLES

Figuring Speeds on Banner Machines.

EDITOR COTTON:

This is in reply to "CONTRIBUTOR No. 6087", in your "KNITTING KINKS" department, who wanted a rule for figuring speeds on Banner knitting machines,

If you have a motor with a 4-inch sprocket on the motor running 1,600 r.p.m., and you want to reduce the speed to say 200 r.p.m., multiply the driver by 8—8 × 4 = 32 inches—which means a 32-inch sprocket or pulley on the driven shaft. This brings the speed to 200 r.p.m. Suppose you desire to run the machines 240 r.p.m., the following rule will be applicable. Multiply the speed desired, which is 240, by the size of the pulley on the machine, which is 7-inch, divide by the speed on the shaft, which is 200. This will give the size of the driving pulley on the shaft. Example: Desired speed, 240 r.p.m. × 7-inch pulley ÷ 200 = 1,680 r.p.m., ÷ 200 = 8.4-inch pulley, which, from a theoretical standpoint you would use, but as pulleys come only in ½-inch sizes, you would have to either increase or decrease the speed, whichever was desired, to the fractional part of the pulley. The same rule will be applicable to the chain drive, as to the speed rule given.

In measuring the diameter of the sprockets, measure from the tip of the tooth instead of the groove, otherwise the figures will not be accurate.

CONTRIBUTOR No. 6223.

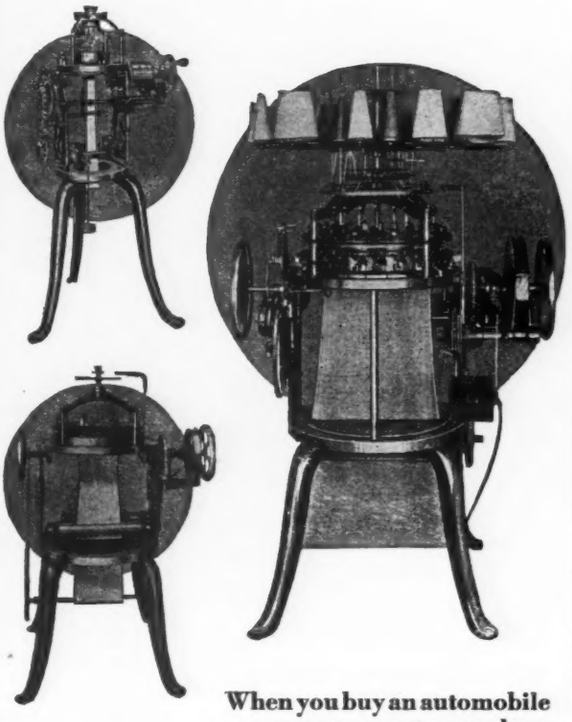
Knitting and Braiding Machine Code

THE Knitting Machine Manufacturers Association and the Braiding and Wire Covering Machine Association submitted a joint code of fair competition under Deputy Administrator Malcolm Muir in Washington on August 10th, and established a record time for a hearing under the Act by completing the presentation and hearing on the code in 23 minutes. The code sets a maximum 40-hour week for labor; and two 40-hour shift maximum machine operation; a minimum wage of 40 cents per hour, except learners and apprentices. It eliminates minors under 16 and states a right to operate open shop.

The trade practices section provides that there shall be no price discrimination, no commercial bribery. Terms of sale are set at 30 days on machines and parts—no discount for cash shall be more than 2 per cent, and payment must be made within 10 days. No agreement of sale shall be for a longer period than 12 months. Adequate financing and interest charges are to be paid by the purchaser. Stocks or bonds of the purchasing company shall not be accepted in lieu of cash. Initial cash payment shall not be less than 25 per cent payable with order or when machines are delivered. No machines shall be put on a rental basis.

Other provisions are: Secret rebates are absolutely prohibited. No old machines shall be accepted as part payment for new machines or parts. All machines shall be sold f.o.b. factory. Agents and importers of foreign manufacturers competing with American manufacturers shall adhere to this code.

MODERNIZE *your* PLANT *with* BRINTONS



Ribbers of every type.

Jersey Machines Plain and Fancy Stitches.

Rib Body Machines For Underwear and Bathing Suits.

Sweater Machines Rib and Jersey Types.

Special Knitting Machines From ¼ inch to 36 inches.

When you buy an automobile—you are sure to purchase a car with a proud performance record. Why not apply the same excellent logic when you equip your mill with knitting machines? The name Brinton stands as high in its field, as Rolls-Royce, Packard, and Cadillac in the automotive industry.

Depend on Brintons

H. BRINTON COMPANY
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BRINTON CIRCULAR KNITTING MACHINES
of EVERY Kind for EVERY Purpose

NATURAL?

Yes, we sell Natural Cotton Yarns as well as Colored Cotton Yarns

Remember, Franklin Process now means "yarn merchants" and not just yarn dyers. We sell cotton yarns of every count and quality both in the natural and colored form, including stock dyed yarns and specialties such as mock twist, ratines and slub yarns.

Putups of natural yarn include every known form commonly used. Putups of package dyed yarn include all forms except skeins and loom beams. Stock dyed yarn can be delivered in any form. Franklin Process mill connections make available a variety of qualities to meet practically every price requirement. These connections also make it possible for customers to standardize on Franklin Process yarns with the assurance that they can get uniform quality from month to month.

Your inquiries will receive courteous and prompt attention.

FRANKLIN PROCESS COMPANY

Yarn Merchants and Yarn Dyers. Also Manufacturers of Glazed Yarns and Machines for Dyeing and Bleaching Yarns in the Package Form, Cotton and Wool Raw Stock, Worsted Tops and Worsted Yarn on Jackspools and Machines for Soaking Silk.

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FRANKLIN PROCESS

COTTON YARNS AND CUSTOM YARN DYEING

THE KNIT GOODS MARKETS . .

Two major developments in silk full-fashioned hosiery and the addition of important features in the production of circular knit are hailed as a foreword of epochal achievements in the marketing of hosiery, an advance in which restrictions imposed by the NRA code of fair trade practice will be entitled to some credit.

It is an opinion of hosiers that the acquisition of the Graenz patent relating to non-run fabric, by the Textile Patents Corporation, which controls the Schwartz patent, marks the beginning of actively promoting sales of non-run stockings. So long as there were rival claimants to the right to knit non-run fabric and rivalry in marketing, which was accompanied by price competition, neither product stood a ghost of a chance of making a market. With the decision of the United States patent office by which the Textile Patents Corporation virtually has a monopoly of the production and marketing of non-run hosiery, there should be no hesitancy on the part of retailers to carry the improved stocking.

Equally important as the non-run stocking as an innovation, the absolutely ringless stocking of silk offers possibilities for winning more friends for full fashioned construction. It is believed attachments for knitting silk fabric in stockings as free from rings as if there were no irregularities in silk have been perfected and that supplies of the device will be ample for taking care of the needs of a reasonable number of manufacturers. The two developments offer opportunities for establishing a fair price level without going through the formality of announcing increases.

Knitting machine builders as a body are busier than at any time in the past three years. The greater strides in mechanical improvement appear to have been made in the seamless field, and it is in that division that expansion is looked for more especially, full fashioned machine interests moving to a position of greater activity by reason of developments noted in women's silk hosiery.

Hosiery mill managements have been showing no little anxiety over stocks which accumulated in mills during virtually two months of severely crippled production by reason of strikes and distrust of distributor attitude toward ready-to-deliver goods which have increased by 65 to 75 per cent in price, in some lines, more especially those numbers which appealed specifically to the masses.

The merchandise managers of some of the establishments rated among the larger buyers and preferred accounts as to credit, have kept the brakes on buying longer than manufacturers could have contemplated. Mills continued operating at a boom stage even after operating cost had been increased under a multiplicity of codes, until stocks began to look cumbersome. Moderate loans on stocks of staple merchandise were readily obtainable, of course, but the more stock goods that manufacturers accumulated the larger the ratio of the sum of the loan, for costs were mounting, and increasing carrying charges added to the cost.

It was hoped that the traditional dullness in August would have been sidetracked this year by demand for goods at somewhat increased prices for distribution in October, at the latest, for a revival in seasonal lines. As weeks went by with little improvement in actual demand, manufacturers who felt they had gone the limit in accumulating stocks to be sold in a perhaps competitive market oversupplied as to certain types of hosiery, found it expedient to close their plants, until, at least, codes directly affecting their business have been given an official and definite interpretation, and the voice of the consumer has been heard.

Certain phases of the hosiery trade served to befuddle manufacturers and the public. For example a few mills were operating as late as the latter part of August to double shift capacity and accepting no orders, having booked up, the management stated, at prices 50 per cent higher than those in March. At the same time, department stores were pushing special sales of reputed first quality silk full-fashioned hosiery at prices in the range 39 to 48, one store featuring 44 cents as a midway price for moving an accumulation of stockings that are to sell for much more per pair in a few weeks, the stores advertised. These sales were reported by store managements as having failed to "draw the crowds", and, it was pointed out by some interests, caused a shopper element to doubt that the stores really were sincere in their warnings of price advances to come.

It was noted that a few department stores which were unloading hosiery taken in at low prices staged their special sales at about the time it appeared, after conferences in Washington, that thirty or more full-fashioned mills in Reading which had been idle by reason of strike would resume operating. The larger mills in the Reading group were understood to be well supplied with orders at the time of the shut-down early in June. Nevertheless, it was reasoned in the trade, with these plants getting into production at a time when numbers of large distributors were buying in only a normal way, the position of concerns having heavy stocks might be weakened.

Demand for Moderate Price Hosiery

There seemed an increasing tendency last month to bid lower, and it was asserted by the management of one well known mill, with a virtually steady outlet for capacity production, that while the plant is sold ahead, prices show very little profit. Buyers, on the other hand, charge manufacturers have been pegging prices faster than demand warranted. Buyers from the South were combing Philadelphia mills a few weeks ago, interested particularly in low end full-fashioned and irregulars. It seemed that the middle of August marked the commencement of things marketwise. There was only limited action in the better

selections, however, buyers being out for goods conforming to the former four-thread 42-gauge at $4 a dozen and 39-gauge at $3.50.

Four-thread 42-gauge stockings were available for spot delivery at $6.25, the quotations of some of the stronger mills ranging from $6.50 to $7. Irregulars were sold in small lots to retail stores for $5.50 for four-and-three-thread 45- and 48-gauge. First quality four-thread 45-gauge have been fetching $7 a dozen, and seven thread 42-gauge, $6.50. It was believed, however, that some mills still were accepting depression prices.

Buyers aiming at a shading from common quotations, of course used the temporary softening in the raw silk market as a bear argument. The dip to $1.86 for first quality Japan, in the second week of August, from $2.31 within four weeks while disturbing to the raw silk market, had no effect on hosiery values. The decline was a result from, rather than a cause of a market condition. It was estimated by Pennsylvania silk throwsters that some had dropped 25 per cent in volume of their business since silk consuming mills had reduced their operating time to 40 hours a week, the throwsters operating on a like schedule. The decline in silk was halted when it became apparent that scores of idle hosiery and silk mills soon would be active.

Mills Flooded with Orders for Women's Silk Seamless Hosiery

A sudden leap in the volume of business offered to manufacturers of womens' silk seamless hosiery has placed a number of manufacturers in this group in a position that few could have contemplated when full-fashioned had dropped into the seamless price bracket. The present advantage accruing to the seamless division is illustrated in the case of a Philadelphia mill which several years ago installed considerable full-fashioned machinery but retained the 300-needle spiral equipment only because buyers, of whom there were a dozen or more, refused to pay an adequate price for the machines. During a great part of August all the 300-needle spiral machines were in operation as many hours as were permitted by the hosiery provisional code, and it was stated orders for several thousand dozens had to be declined on a question of delivery. The full-fashioned equipment in this mill was engaged on only part time and producing ahead of orders at that.

Reports from scattered seamless mills and the Department of Commerce tabulation of statements of 286 identical manufacturers for June, representing 72 per cent of the production reported at the 1929 biennial census of manufactures, indicate that women's seamless is having an inning. The increase in output in June, compared with the corresponding month of 1932 was 47 per cent, while the increase in the reported output of women's silk seamless was but 15 per cent, the Commerce Department tabulation shows.

Women's seamless cotton hosiery was more than doubled in production in June, as shown by the reporting mills, output amounting to 285,530 dozens, comparing with 132,317 dozens in June 1932. A perhaps significant revelation is a showing of 21,288 dozens of women's cotton full-fashioned stockings produced in June, as against 2,403 dozens in June last year. Cotton and silk combination was used in the production of 140,000 dozens, and there was an increase of more than 50 per cent in the production of women's rayon full-fashioned. The outstanding increases in production in June over June a year ago were: Infants, 231,027, from 93,170; athletic, 17,290 from 5,591; juvenile, more than 100 per cent; men's seamless half hose, 915,747 from 573,115. A gain of approximately 100,000 dozens is reported for men's half-hose of cotton and rayon combination.

Mills Report Leap in Unfilled Orders

The 286 identical mills reporting for June had at the end of the month unfilled orders for 1,551,928 dozens of women's full-fashioned hosiery, which was over a million more dozens than at the end of June 1932. Buying in June seems to have been general, for the unfilled orders for men's half-hose amounted to 3,357,121 dozens, an increase from 976,510 dozens, and for juvenile lines, 1,539,222 dozens, from 428,434 dozens. Orders booked in June showed a gain over June of last year of 97 per cent, to 8,670,687 dozens, and cancellations increased by 90 per cent.

Considering the number of plants idle in June, the reports are suggestive of possibilities when all are in operation for only two 40-hour shifts per week, the figures as to orders booked and shipments would seem to refute the impression that the big buyers had not operated in the rising market. The heavier buying probably was done in June, before the season's more radical advances had become effective, which might account for the indicated slack situation in August, when prices were at their crest for 1933. Of the 286 mills reporting, 13 stated they had no production.

Low price hosiery seems to be causing wholesalers more concern than goods in the higher brackets. In men's half-hose and children's lines certain numbers which jobbers have been selling for 90 cents a dozen will cost retailers between $1.55 and $1.60 a dozen. "Will we sell as many?" jobbers ask.

The markets for hosiery have not had a fair test as to strength, prices on certain lines were withheld during the weeks that conditions were much unsettled. Women's seamless silk for the popular price range were well established in demand, but infant's socks, on the other hand, were not offered freely while codes remained a matter of some doubt and prices for yarns were fluctuating at a rate that left ultimate values to conjectures, and little or nothing on which to base prospective prices for manufacturers desiring to anticipate.

Misses' cotton hosiery of types representing the bulk of the sales have given merchants a scare, by reason of a rise of almost 100 per cent. A line of anklets sold by jobbers at around 90 cents to $1 a dozen will cost retailers about $1.75 when jobbers begin distribution of like goods produced under the code. The Berkshire Knitting Mills has been obliged to add approximately $1.75 a dozen to orders taken prior to June 1 to cover for increases in cost due to factors other than the strike. A southern manufacturer of seamless goods writes to a customer in the North that several weeks after starting operations in

accordance with the code sales fell off and recently it became expedient to dispense with some of the help, inasmuch as it was contrary to the policy of the manufacturer to accumulate stock goods.

In the expansion of equipment for seamless hosiery other than women's and misses' silk and rayon numbers, which expansion has been mainly for balancing production facilities, style development is in the direction of stripes, although, it is stated there is seen little inclination among manufacturers to depart from staples which have had sustained outlets. But there is noted a modest trend to stripes in the cuffs of anklets, and manufacturers recognition of a further consumer acceptance of ribbed tops. In infants lines there seems indicated a drift to finer gauge.

Among jobbers and chain store buyers there is a disposition to regard the prices on some lines of hosiery as feelers, put out for finding out about how much of an increase the traffic will bear. Some believe that offerings of women's silk seamless hosiery to retail for around a half dollar a pair may take the gas out of the bag carrying four thread 42-gauge to the $7.25 level set by some mills as the prospective trading price a few months hence. This would represent a 100 per cent jump in the prices of some manufacturers of low end numbers of this description.

It is maintained among mill agents and wholesale distributors that the manufacturer who has repriced his product on absolute knowledge of its increased cost is a genius, with no peer in respect to mastering codes. This view would appear to be supported by assertions of manufacturers themselves that in the confusion over codes, the shift from 54 hours and more to a 40 hour week, and reckoning with minimum wage, it has not been possible, in the few weeks since the new order of things has prevailed, to definitely ascertain costs. This was the explanation for a time for not quoting. It is an opinion of some successful hosiery manufacturers that some weeks will elapse before a uniform price would be possibility, and that in the meantime quotations will depend on how eagerly a mill wants business or on the extent to which mills have accumulated stocks.

It is a reasonably safe assumption that purchases of hosiery for distribution at large represent only a small part of the quantities which will be wanted in retail stores by the middle of next month; and it is an equally safe conclusion that women's full-fashioned hosiery will cost the consumer an average of 25 cents a pair more than she was accustomed to pay during the depression. Whether as many pairs per capita will be bought at the counter will be contingent on whether the consumer income has or has not increased apace with the rise in prices of essentials that enter into the every-day needs of the average consumer. The merchant will believe that, as in the past, the hosiery and other wares that he will need can be had for the asking, if he pay the price. He may defer the longer if he has reason to believe that manufacturers plan to have ready-to-deliver goods for the emergency that has been pictured in a laudable effort to promote sales and keep the wheels of industry turning.

A United States Patent Office decision of utmost importance to the hosiery industry was announced on August 12 in the cause of Nathan Schwartz, originator of non-run hosiery fabric, against Alfred Graenz, owner of a patent relating to non-run fabric, the Gotham Silk Hosiery Co., Inc., sole licensee thereunder. The case for Schwartz was in charge of William R. Smith, attorney, who is vice-president of and counsel for the Textile Patents Corporation, which corporation has been back of the Schwartz patent and now is in control also of the Graenz patent, which the Patent Office decision awards to Schwartz, together with all the Graenz claims, eleven in number.

Gotham Hosiery Co. Loses Fight Over Non-Run Hosiery Patents

It was common report at the time that the Gotham Silk Hosiery Co. sponsored the claims made by Graenz for his patent that a very large sum of money was paid for the Gotham company's rights in the matter as licensee. In the contest for invalidating the Graenz patent, the Gotham company, defending, was represented by perhaps the strongest battery of legal talent appearing in any patent controversy in recent years, its counsel comprising Emery, Booth, Varney & Townsend, Boston; Darby & Darby, Gifford, Scull & Burgess, and A. I. Spiro, all of New York, the importance in which the contest was held being indicated by the employment of attorneys rated among the leaders in the field of patents. This is said to be the first time that the Gotham Silk Hosiery Co. was bested in a suit involving patents in which it has been interested.

It is stated by William R. Smith, attorney for Schwartz, that upon the issuing of a patent to Schwartz for the Graenz fabric, the position of the Textile Patents Corporation in the non-run hosiery field is considerably strengthened, and it is Mr. Smith's opinion that the two Schwartz inventions cover all possible ways and means for making non-run hosiery in a practical and commercial way, besides providing a complete monopoly for the elimination of all infringements.

The Gotham Silk Hosiery Co. was really the promoter of the Graenz fabric and the only competitor of the Textile Patents Corporation and its licensees in the manufacture and sale of non-run hosiery. Thus, it will be seen, the Patent Office decision gives the Textile Patents Corporation, of which William Meyer, president of the National Association of Hosiery Manufacturers, is president, additional valuable protection for elimination of unfair competition in relation to the manufacture and sale of non-run hosiery.

The Textile Patents Corporation, it is stated by Vice-President William R. Smith, is formulating plans for sales promotion in the fall based upon recent favorable reaction from wholesalers, retailers and consumers.

To Push Ringless Silk Hosiery Sales

Silk stockings from which the "rings", sometimes referred to as zebra stripes, are absent have been in somewhat increasing sale nothwithstanding the interruption to trading by reason of strikes and extraordinary conservatism on the part of distributors incident to adjustments under the several codes directly affecting hosiery. And it is to be remembered that

Profitable performance

Good needles are an asset.

Poor needles are a liability.

Good needles earn you a profit.

Poor needles show you a loss.

For finer qualities, greater speeds, more firsts, fewer seconds—a clearer, sheerer fabric and a lower production cost—good business demands the best needles.

That we are America's largest producers of Spring-Beard Needles and that nearly all manufacturers of fine quality stockings are standardized on ROYERSFORD is a tribute to *profitable* performance.

ROYERSFORD NEEDLE WORKS, INC.

America's Largest Makers of Spring-Beard Needles

Main Office and Works—Royersford, Penna.

Southern Office—Provident Bldg., Chattanooga, Tenn.

NRA MEMBER U.S. WE DO OUR PART

ROYERSFORD NEEDLES

STANDARD STEEL AND DURAKROME

the more nearly perfect stocking has been given no publicity by manufacturers and little if any by retail stores. Wanamaker's in Philadelphia display ringless as a part of a group of recent features, others being the adjustable toe of the Schuylkill Mills and an extra expansion hem from another mill. But now that business is seen definitely headed toward revival, plus normal fall activity, some attention is to be given to exploiting the ringless by not only manufacturers, but also the producers of machine attachments for overcoming the marring of hosiery by unevenness in silk. A fine gauge ringless from an upstate Pennsylvania mill is sold to retailers for $10.50 a dozen.

The Knitting Engineering Co., of which Paul Krenkel is the president and general manager, advises that it is now producing ringless hosiery attachments for full-fashioned machines in sufficient quantity to make reasonably prompt deliveries, and it is stated that, although receiving no unusual publicity, ringless stockings are selling in some of the leading stores in fairly good volume. The Krenkel device, of which Mr. Krenkel is the inventor, is in daily demonstration at the engineering company's plant, Robbins avenue and Sherborne street, Lawndale, Philadelphia.

Mr. Krenkel points out that the tension device which is a part of his attachment is an equalizer, by which silk threads of varying diameters are given a virtually uniform tension. While the tension equalizer is used in conjunction with three carriers, it is claimed that it improves the fabric even though but one cone of silk be used, without aiming at prevention of rings. With the use of three carriers, and alternating with each course, elimination of rings is said to become a reasonably satisfactory process, reaching its acme of perfection, however, in a tension treatment by which, it is claimed by the inventor, greater uniformity of fabric construction is obtained.

Conflicting Opinion on Restrictive Machine Clause in Knitting Codes

Whether, under the NRA code for the hosiery industry as drafted when this was written and as it will read in the final draft, manufacturers will be able to install additional machinery without permission is a moot question, or was while representatives of the National Association of Hosiery Manufacturers were contending for certain modifications, after a number of spirited hearings. And in the code submitted by the Underwear Institute for the underwear industry different interpretations were put upon clauses relating to machinery.

Speaking for the hosiery industry, a well known manufacturer who is active as an official of the hosiery men's organization, said quite recently there was no doubt that the NRA administration would require evidence that intended installation was necessary before permission for adding equipment would be granted. Machine builders held a directly opposite view, predicated on the assumption the government would take no action that would be detrimental to any given industry. Hosiery manufacturers would be interested in preventing any plant expansion while the NRA administration seeks to avoid excessive production as a means toward maintenance of profitable prices. Builders of knitting machines, who have had two or three lean years, of course want no restrictions on additional installation, and it appears the question of who is right and who is wrong may be fought out weeks after codes have been approved by the administration.

In the hope of clarifying the matter, H. W. Anderson, president of the Fidelity Machine Co., Philadelphia, who was in constant attendance at the August hearings in Washington on the hosiery and underwear codes, was asked for an interpretation of the code phraseology bearing on restrictions on knitting machinery. He said in part:

"It is my opinion that the code for fair competition in the hosiery industry as submitted to Dr. Lindsay Rogers, deputy administrator, treats the limitation clause relating to the purchase of machinery as an addition to productive equipment, entirely upon a basis of recommendation to the National Recovery Administration.

"At the code hearings of the Underwear and Allied Industries August 10 and 11, deputy administrator A. D. Whiteside was quite clear in his stand eliminating from the main body of the code the clause for the restriction of machine purchases, which becomes effective at the time of approval of the code. It is my understanding that if such restrictive clause appears in the final code as it is to be submitted for approval, it will follow under the heading 'recommendation.' "

"In theory," Mr. Anderson continues, "the restriction of machinery purchases would present a Utopian condition. In practice, however, as both hosiery and underwear manufacturers are well aware, there would lie hidden dangers resulting from the super-power granted to any appointed committee and any individuals on such committees, to decide who shall and who shall not have the right to manufacture and or expand. As a result of action taken by various deputy administrators, it seems quite probable and most logical that any restrictive measures covering the purchase and installation of new and additional equipment will be so accepted that the action and authority will rest with the National Recovery Administration itself, rather than with individual control committees."

In the case of the underwear industry, the code submitted for approval vested in a committee of the organized industry the right to pass upon and dispose of applications for installation of machinery. The giving of such authority to a committee was objected to by deputy administrator Whiteside, as referred to in the comment by Mr. Anderson.

Sweater Manufacturers Booking Orders at Twice the Prices at the Opening

The knitted outerwear industry seems to have slipped into its new position under the several recovery act codes with less jolt than has attended the shifting of the hosiery and underwear trades from ownership complete domination to tacit government control. This is a conclusion to be drawn from the generally vary satisfactory conditions among manufacturers of sweaters, after a rather trying bathing suit session which scored a profitable finish some weeks ago.

Sweater manufacturers as a body have been well engaged since the ending of their swim suit season.

They have had to contend with steadily advancing prices for worsted yarns, which by the middle of August were quoted approximately 100 per cent higher than in March—prices being doubled within a period of five months. For several months, mills have been turning off sweaters for delivery in September-October, and as they are working on orders only, accumulating no stock, it seems apparent that jobbers were less reluctant to anticipate fall needs in knitted outerwear than in hosiery and underwear, in both of which the advances were no less radical than in sweaters.

Since they commenced operating under the knitters' code, manufacturers have pegged their sweater prices higher, and feel that the peak for 1933 has been reached unless advances in wool carry yarns to a higher level. A popular price sweater for women which was priced $12 a dozen at the opening and has been a leading seller with a number of mills, is now costing jobbers $24 a dozen against orders placed in the latter part of August. There had been a rise of $7.50 on increased labor and yarn cost, and early last month $4.50 more was added to the price.

Probably 50 per cent of the manufacturers' business in sweaters was booked at the opening prices. Numbers of the department stores placed their orders for fall deliveries before the first advance in prices went on, and when it finally became effective, they callled the goods in well ahead of schedule. Thus, mills were kept in production from early in the manufacturing season, and some have had to employ two shifts of operatives. It is realized that new orders, at the higher prices, are going to be hard to annex.

Credits among manufacturers of knitted outerwear have been well maintained, according to their yarn suppliers. A representative spinner selling extensively to the knitting trades states that losses have been light and that last month less than two per cent of the spinner's accounts were delinquent in matter of maturing invoices. Satisfactory credit conditions are cited as accounting for the fact knitters always, during the rise in prices, were able to buy yarns well ahead. Their yarn requirements were said by spinners to be covered to the end of September. By that time most mills will have run out of orders made out of comparatively low price yarn, and for the first time probably will be putting in process yarns costing them 100 per cent more than when they booked their initial orders for the season.

Trading in Underwear Held Up by Delay in Agreement as to Code

Delay in constructing a code of fair trade practice for the underwear industry may have provided jobbers with a puncture-proof pretext for deferring in the matter of contracting for their second installment of fall underwear. It suited most jobbers that manufacturers professed to be unable to name prices until a code for their industry has been "sealed, signed and delivered". The hearing in Washington on August 11 on a revision of a proposed code left matters pretty much as they were, as the hearing was adjourned until further call, followed by conferences of various groups. As no conclusions were reached, the Underwear Institute was left codeless, although having devoted probably more time and effort to the phrasing of a fair trade practice than any other industry, the cotton textile institute excepted.

Underwear jobbers seem appalled at the increases in prices to be put on men's heavy weight cotton underwear. As the 12-pound union suit seems to have been picked as a probable leader in sales, that garment is used for price comparison purposes. It cost jobbers last year $3.75 to $4 a dozen. Manufacturers have been non-committal as to prices under the code, intimating a standard 12-pound union suit probably will cost jobbers between seven and eight dollars a dozen. A spokesman for a Tennessee mill thought it might be slightly more than $7. Some suggested $7.50 and others as high as $8. "It looks like a 100 per cent increase over the 1932 price," say jobbers. By the time jobbers and retailers have adjusted prices to their higher cost of doing business, the increase to the consumer will of course exceed 100 per cent, it is suggested by sellers figuring on the effect the advances will have on jobbers when finally they come to market for the remainder of their fall underwear.

Jobbers are more exercised over their sales of heavy weight underwear to be delivered in September than over the prices they must pay for what they have yet to buy. They bought at the opening for a fair proportion of their probable requirements, and retailers' orders are represented as absorbing about all of the early purchases. While there is little doubt that dealers will call in every dozen of underwear acquired at pre-code prices, some jobbers say they recognize the force of the proposal that orders for undelivered goods may not represent actual sales and will not until the dealer has accepted delivery. Thus a jobber is prone to say "We think we sold," instead of "We have sold". Which has the effect of causing primary market sellers to feel a bit shaky about a buyer's intentions in relation to his next order.

Mill representatives, while maintaining a cheerful attitude as to the business remaining to be placed by jobbers, say there is little doubt that orders will be withheld until very late, in which event manufacturers, unless they make up underwear for stock, would be offered more business than they could handle, and demand would enable some to exact a premium for deliveries. It is pointed out that the effect of the price advances has been felt, in some extent, in summer underwear and as sales show no material falling off, jobbers' indicated alarm over increases in winter weights is an exaggeration.

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There are more $35.00 overseers than there are $60.00 ones.

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Because Quissett Yarns are primarily quality products, no trouble is spared in selecting the highest grades of cotton obtainable. The best of Egyptian, Sea Island, Arizona and Peeler cottons, Peruvian, Brazilian and Quintex cottons, are among those used for Quissett Yarns.

But the pick of the world's long staple cotton crop is only the FIRST step of Quissett in producing the highest quality yarn.

Quissett also has the pick of operatives, the best of machinery and climatic conditions known to yarn manufacture.

1910 QUISSETT MEANS QUALITY 1933

Wm. M. Butler, Pres.
Edward H. Cook, Treas. Thomas F. Glennon, Agent

REVIEW OF THE YARN MARKET

Philadelphia, Pa., August 17, 1933.

AN aggressive selling movement that carried cotton to a mid-August level where 43 per cent of the amount of the processing tax represented the decline in price from August 1st, when the tax became an additional charge on the consumer of cotton, caused some disturbance in the not too well settled yarn markets. The upset in prices was of course momentary, but the effect served to complicate matters for sellers, who had but begun to see a virtual completion of adjustment under the code and hoped for an approach to uniformity in prices.

All classes of yarn had been priced excessively high while spinners were getting a definite knowledge of increased operating costs under a reduced work time schedule, and a minimum wage and in addition an apportionment of the processing tax on various counts of yarn. Within a period of less than a week in early August, prices carried by trade publications underwent a drop of around five cents on coarse counts of carded. Mercerized yarn, quoted 86 cents for 60s/2, were advanced by authority of a mercerizer to 96½ and a week later that list was reduced by approximately 10 per cent—more as to some counts.

Combed yarns were pegged 10 cents above prices at which sales were reported by sellers as having been effected. Even after the list had been several times revised, a leading house was quoting 65 cents for 60s single, which was three cents lower than the price in a trade list, and the 65 cent price proved five cents higher than a figure named in competitive selling. As little business has been passing the price disparity did not have the demoralizing effect that otherwise would have been experienced.

Deliveries of yarns against relatively low-price contracts have been maintained at a stage which relieved sellers' anxiety as to the fate of certain of the contracts, and there was reported no let-down even when the market appeared weaker under heavy selling of cotton. Some of the southern spinners were reported by Philadelphia selling houses as in need of business. Stock lots of carded and combed yarns which had come to be a disturbing element, in that there were offerings at materially shaded prices, seem to have been disposed of, so that, as spinners settle upon a schedule of increasing costs under NRA operation, a measure of price uniformity may be looked for. During the period when fancy prices for southern combed peeler were listed, northern mule spun single combed was sold in Philadelphia for less than comparable southern yarn was being offered. This is vouched for by the local house which lost the order in competition. To some interests it proved surprising that northern and southern spun yarns were on a parity.

Carded knitting yarns have had a slow market, so far as relates to new business, by reason of delay in formulating an underwear code for final submission. The principal explanation for slack conditions in underwear yarn is the fact that some leading manufacturers have very large holdings of yarn and have been operating plants on a much curtailed basis. There is, however, some day to day small business in carded and combed knitting numbers.

Weaving numbers moved into better demand lately, and on the basis of 33 cents for two-ply warps a fair amount of business was to be had. Most dealers were quoting 34 cents but it was stated the bulk of the business taken was at 33. Buyers balked at quotations of 40 cents for 30s two-ply warps, some claiming to be able to cover for their wants at two cents less. It appeared less progress had been made in adjustments of weaving yarn prices to conditions than marked the progress in getting knitting counts in line with actual known operating costs.

A slow market from the standpoint of sales but fertile in inquiry and developing as recovery in business proceeds generally, is predicted by observant yarn interests for the early fall weeks.

Tentative Philadelphia prices, applying entirely to spot delivery and subject to spinners' confirmations, with tentative adjustment under the processing tax of 4.2 cents per pound, were published on August 16 as follows:

Single Skeins

4s to 8s.....30	10s.....30½
12s.....31	14s.....31½
16s.....32	20s.....33
24s.....35	26s.....36
30s.....38½	

Single Warps

10s.....30½	12s.....31
14s.....31½	16s.....32½
20s.....33	26s.....36½
30s.....39	

Two-Ply Skeins

8s.....30	10s.....31
12s.....31½	14s.....32
16s.....32½	20s.....33½
24s.....35½	26s.....36½
30s.....39	40s.....49

Two-Ply Warps

10s.....31½	12s.....32
14s.....32½	16s.....33
20s.....34	24s.....36
26s.....37	30s.....40
40s.....50	

Frame Spun Carded Cones

8s.....30	10s.....30¾
12s.....31¼	14s.....32
16s.....32½	18s.....33
20s.....33½	22s.....34½
24s.....35½	26s.....36½
30s.....39	40s.....49

30s double carded 41-43
30s tying in 37-38

Carpet Yarns

8s and 9s white warp twist 30
8s tinged tubes 28
8s part waste 26

Two-Ply Combed Peeler Skeins and Warps

8s to 16s.....40 @43	20s.....46
24s.....47	30s.....50
40s.....57	50s.....62
60s.....70	70s.....81
80s.....91	

Single Combed Peeler-Yarns on Cones

10s.....40	14s.....42
16s.....43	18s.....44
20s.....45	24s.....46
30s.....49	36s.....52
38s.....54	40s.....56
50s.....61	60s.....68
70s.....78	80s.....88

Mule Spun Carded Yarn on Cones

10s.....35	12s.....36
14s.....37	16s.....37½
18s.....38	20s.....38½
24s.....40½	28s.....42
30s.....44	40s.....54

Mule Spun Combed Peeler Yarn on Cones

10s.....44	12s.....45
14s.....46	16s.....47
18s.....48	20s.....49
22s.....50	26s.....51
28s.....52	30s.....54
36s.....57	38s.....59
40s.....61	

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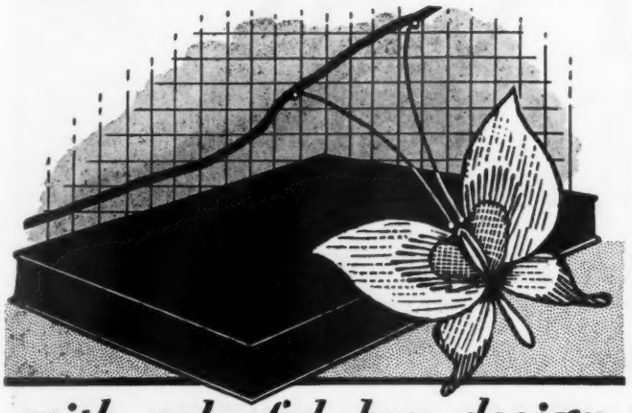

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DEXTRINS

White Dark Canary
Canary British Gum

WARP sizing as well as printing, dyeing and finishing processes offer many problems in the use of starches, dextrins and gums. The selection of the proper products is of great importance. Listed above are products available for the purposes and conditions of exacting textile manufacturers.

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IMPORTANT

Our research department will be glad to furnish additional information regarding the types and uses of these and other products as applied to the special needs of the Textile Industry. Write to—

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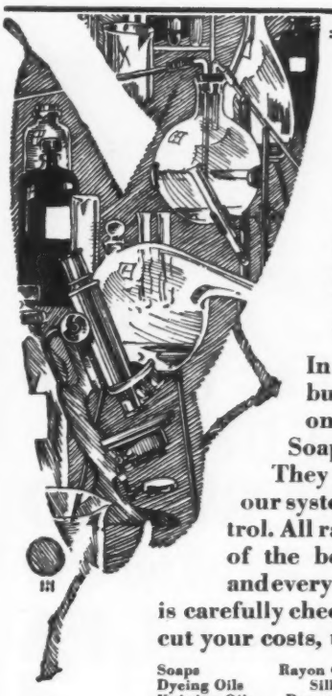

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In these days of careful buying, it is real economy to choose Laurel Soaps, Oils and Softeners. They are kept uniform by our system of laboratory control. All raw materials used are of the best obtainable grade and every step of the processing is carefully checked. If you want to cut your costs, use Laurel Products.

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Specifications for all types of

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ABBOTT MACHINE CO.
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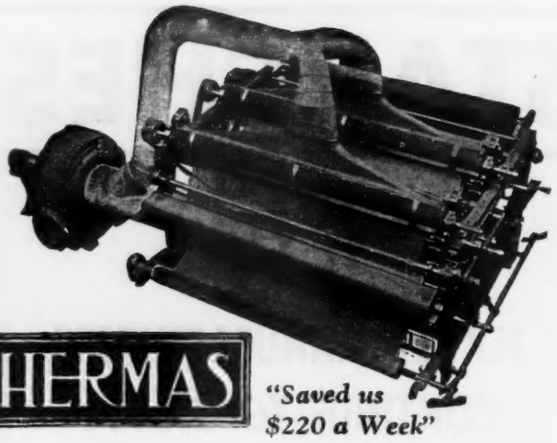

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for Roller Covering
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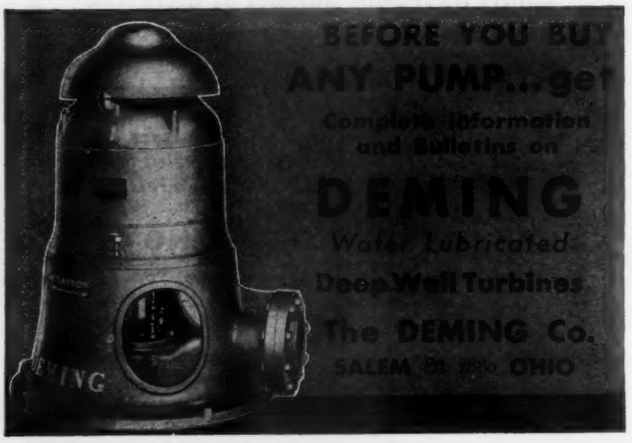

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THE BOWEN PATENTED BEVEL EDGE TRAVELER
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FOR
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Dyed, Bleached or Natural Cotton
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The added lubrication makes the cotton Card, Draw and Spin *better*... reduces Dust and Lint.

MINEROL conditions the fibre and softens the natural coatings, so that the cotton reacts more readily to subsequent operations, such as ● Dyeing ● Bleaching ● Mercerizing.

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All Makes of Grinders Promptly and Thoroughly Repaired

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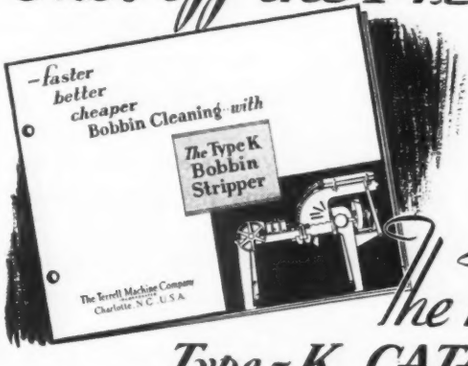

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Publisher's Statements and Audit Reports

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National advertisers need deal with no publisher who fails to present a detailed and authentic survey of his circulation, bearing the stamp of the A. B. C., a stamp placed after impartial investigation. Most local advertisers are in the same position. The A. B. C. membership includes nearly fifteen hundred publications, circulating in every corner of the continent, north of the Rio Grande.

Through the A. B. C., a steady stream of circulation information is constantly flowing into the hands of advertisers and advertising agents. As of March 31 and September 30 each year, the newspaper members present sworn publisher's statements, giving their circulation statistics for the preceding six-month periods. The magazine, business paper and farm paper members present their semi-annual statements as of June 30 and December 31.

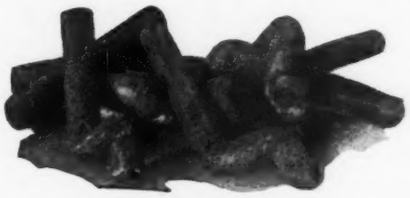
Seventy traveling auditors of the Bureau visit the publisher members once a year and examine the documentary evidence behind their circulation claims.

Audit reports present no opinions. They are based on documentary proof and are as accurate as it is humanly possible to make them.

With the semi-annual publisher's statements, checked and amplified by the annual audit reports, the advertiser can learn throughout the year fully and accurately just what A. B. C. publishers have to offer in the way of circulations when they solicit business.

COTTON

1020 Grant Bldg. **Atlanta, Georgia**



LOSS

can only result from the use of ordinary crankshafts. The scrap pile shows that ordinary shafts usually break at the bend, and the loss from crankshaft breakage is an unbelievable item in textile maintenance costs. This loss is no longer necessary.

PROFIT

is bound to result from the use of BABBITT Loom Crankshafts—the shafts that are the result of 40 years specialization and an exclusive BABBITT machine which employs a special bending, upsetting and squeezing process and introduces 50% more metal into the bends where ordinary shafts break. This, combined with the highest quality metal, accuracy of measurements, careful finish and skilled workmanship overcomes crankshaft breakage and keeps your looms running without loss of production time.

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The Extra-wear Spinning Ring

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Devoted to making "DIAMOND FINISH" Spinning and Twister Rings since

1873

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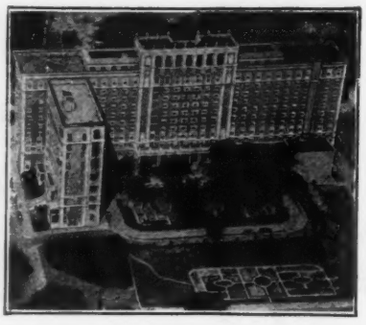
ATLANTA BILTMORE

"The South's Supreme Hotel"



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A large number of textile men have adopted the Biltmore as their stopping place in Atlanta, chiefly for these three reasons:

1. **Dignified and personalized service.**
2. **Large, comfortable outside bedrooms that induce rest.**
3. **Excellent food at moderate prices.**

Ever alert to give its guests all of the finer things of life, the Biltmore management has earned its title, "The South's Supreme Hotel."

Reasonable Rates:

(No court rooms)

Single, $3, $4, $5

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Room Reservations for how many?

Popular Priced Meals Served in All Dining Rooms

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Value

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PHILADELPHIA

600 ROOMS AND BATHS

A Room and a Bath For Two and a Half

$2.50 *Single with Bath*

$4.00 *Double with Bath*

WE HAVE THEM AT

HOTEL PENNSYLVANIA

BROAD & CHESTNUT Sts., PHILADELPHIA

Dependable!

There are still a few mills who do not know where *real dependable* used textile machinery can be secured.

We would like to point with pride to the great satisfaction of our many customers; and call attention to the fact that we are one of the oldest established and successful companies whose years of experience in the sale of used textile machinery has equipped us with an intimate knowledge of types, values and markets that is invaluable to textile mills.

Our reputation for dependable equipment at fair prices has never been questioned.

We endeavor to not only meet requirements but to anticipate them, and can frequently supply many "hard-to-get" items.

May we serve you, too?

JONES MACHINERY COMPANY INCORPORATED

We are always in the market for dependable used textile machinery. Send us a list of what you have to offer.

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INDUSTRIAL TRUST BLDG. Plantation 3642

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by . . .

THIEVES . . . VANDALS

Put a stop to unwarranted trespassing—enclose your mill with a sturdy Stewart Non-Climbable Chain Link Wire Fence of copper-bearing Steel galvanized AFTER fabrication.

Phone, wire or write factory or representatives

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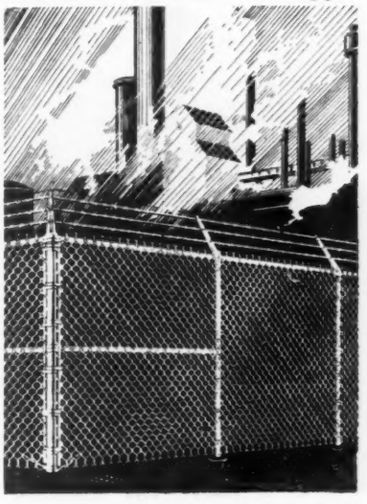
The STEWART IRON WORKS CO., Inc.
912 Stewart Block Cincinnati, Ohio

Again, the sound of machinery in motion is thrilling music. Busy executives are again giving heed to the orderly control of employees, the elimination of petty pilfering, the more serious trespassing of vicious intruders and the safe-guarding of valuable material.

Fortunately, the economical solution to these problems is still at hand. The installation of dependable Cyclone Fence still saves many worries and many dollars.

Cyclone Fence has been protecting textile properties for many years. Made of rust resistant copper steel, heavily galvanized to withstand all weather conditions. Quickly and economically erected by our factory trained men, if you desire. An accurate estimate of the cost of adequate protection for your property will be supplied upon request, no obligation. Write for literature. Address Department "C".



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Branches in Principal Cities

SUBSIDIARY OF UNITED STATES STEEL CORPORATION

Pacific Coast Division:
Standard Fence Company, Oakland, Calif.

Cyclone—not a "type" of fence—but fence made exclusively by Cyclone Fence Company and identified by this trademark.

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A Loper contract contains the guarantee that its service will pay you at least twice the amount it costs you.

Let us give you references that prove we accomplish even more than we guarantee.

Fully 25% of All Cotton Textile Spindles in the U. S. are operated on the Loper System.

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INDUSTRIAL ENGINEERS

Specialists in Textile Cost Methods Over 20 Years.

FALL RIVER, MASS. GREENVILLE, S. C.

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20 years without a drink—

"First bought 'Arguto' bearings 25 years ago . . . still buy them because they're alright."

—unsolicited testimonial

ARGUTO OILLESS BEARING CO.

Wayne Junction, Philadelphia, Pa.

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Works: 2046-48 Amber Street

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3 inches	4.80	20 inches	4.00
6 inches	4.60	50 inches	3.80
10 inches	4.40	100 inches	3.60

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Advertisements set "Want ad" style. Positions wanted .05 word per insertion. Minimum charge $1.00 per insertion. Cash with order. All other classifications .10 word per insertion. Minimum charge $2.00 per insertion. Advertisements of equipment, for sale, rent or wanted and professional cards are accepted at display rate only.

Box number addresses care of COTTON, Grant Bldg., Atlanta, Ga., count as eight words.

NEW DEAL WANTED

By dyer with fifteen years' experience in package-machine and skein dyeing and bleaching of cotton thread, two plys and singles, all qualities and sizes, with all types of colors. Also experienced on woolen, worsted and rayon yarns. Fully capable of installing and operating dyehouse and laboratory in this or any other country. At present employed as Supt. of dyeing in New England mill. Textile college graduate. Age 38. Excellent references. Address Box 107, c/o COTTON, Grant Bldg., Atlanta, Georgia.

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An Old established Refinery wishes to make a connection with an established house having a sales organization and who desires an additional line of textile oils, softeners, etc., for their Southern trade.

Please give complete information in first letter.

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A full fashion superintendent, now employed by a large union mill, is desirous of making a change. Well trained in the ways that keep costs down and with ample experience in handling help, both organized and unorganized, in costs in hosiery design and in all subjects relating to full fashion mill operation.

Write to Box 110, care COTTON, Grant Bldg., Atlanta, Ga.

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PATENT LAWYER

1101 Earle Bldg., Washington, D. C.

IDEAL MACHINE CO.

BESSEMER CITY, N. C.

Repairers of

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SPINNING SPINDLE WHORLS RE-CUT
SPINNING STANDS REAMED
DRAWING ROLLS RE-COLLARED

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To represent long established concern manufacturing textile machinery.

Must be a graduate of recognized textile engineering course. One who has been a dyestuff demonstrator with sales experience preferred.

State age, experience in detail and salary. Address Box 108, c/o Cotton, Grant Bldg., Atlanta, Ga.

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In Tannate Belts pliability, strength, grip and durability are combined in an unusual degree.

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MANY textile mill men who keep in view both output and economy of production are using Rhoads Tannate Belts with highly satisfactory results.

A few extra picks per minute on looms, a few extra turns of front-rolls on spinning frames, together with longer belt life on these and other machines often make possible both lower production costs and greater output.

The strong grip of Tannate, its little stretch, its great flexibility and resiliency give it a power-transmitting capacity that is unusual and make available a reserve capacity that may be called on when emergencies arise, or when you want to rush production.

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We have built a reputation that is known over the entire South by our special attention to the minutest detail.

We are more than ready to answer any question that relates to your printing problems.

Write us and let us quote you on anything from a postal card to a full bound book.

The A. J. Showalter Co.
PRINTERS AND PUBLISHERS
DALTON GEORGIA

Saves Coal!

KEEP scale out of your boilers and you save at least half of the coal they now consume, as well as lower maintenance and repair costs.

There is no need for shutdown to clean boilers. There is no need for turbining and rattling off scale, which obviously is weakening to the metal of boilers and boiler tubes.

The modern, safe, scientifically correct method to eliminate scale is with BROOKS IMPROVED BOILER METAL TREATMENT. It eliminates every particle of scale and then forms a tissue thin film over the metal to which further scale cannot adhere. It stops pitting and no odor nor impurities is carried over into process steam. It is economical and easy to use.

Write for our trial offer.

THE BROOKS OIL CO.,
CLEVELAND, OHIO.

BROOKS IMPROVED BOILER METAL TREATMENT

GUARANTEED BY BROOKS OIL CO.

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Whitin Machine Works 5
Whitinsville Spinning Ring Co.125
Wildman Mfg. Co. 100
Williams & Sons, I. B. ..... *
Willcox & Gibbs Sewing Machine Co. .....Back Cover
Wolf & Co., Jacques ..... *

Condor Compensated

PAT. APPLIED FOR

TRADE MARK

NRA MEMBER U.S. WE DO OUR PART

Genuine evidence of the general use of Condor Compensated belts in a large textile mill. This card room uses hundreds of feet of our belt.

Operate at LOW TENSION— reducing fastener, power, and maintenance costs

The unusual and practical design of Condor Compensated belts is a feature that provides economy and efficient operation on the most difficult drives.

Thousands of feet have been bought to replace worn out belts in textile mills. The belt operates at low tension, at speeds up to 5000 f. p. m. on very small pulleys if necessary. It has an overload capacity of 100% and seldom requires taking up or special attention of any kind. Fasteners stay in 3 to 4 times longer than in our Standard Rubber belts.

Condor Compensated belt is a general purpose belt for textile mills to be used with or without idlers and is designed to eliminate all belting maintenance during its long period of running.

Condor Compensated belt and Condor Products are sold by leading jobbers

The Manhattan Rubber Mfg. Division of Raybestos-Manhattan, Inc.

Executive Offices and Factories, Passaic, New Jersey

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FOR the rapid, accurate and even sewing of labels on shirts, pajamas, underwear, towels, etc. Fitted with a registering, measuring device which controls thread perfectly, giving sharp corners without looped stitch effect. Its high speed and extreme accuracy of stitch enable operators to turn out record production with quality sewing.

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